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ORIGINAL ARTICLES.

REMARKS INTRODUCTORY TO A DISCUSSION ON ACUTE DIFFUSE PERITONITIS,

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Question 1. What does the normal histology of the peritoneum teach us of its physiological purpose?

The first question in our programme might have been not inaptly preceded by the inquiry, what is a "serous membrane?" and simple as the query sounds, there would be diversity of opinion in the answers to it; for neither in embryological origin, in apparent physiological use, nor in reaction to morbid processes, is there correspondence between all the textures which are grouped under this generic title. The epiblastic ocular chambers and aural labyrinths still hold their places in our text books, notwithstanding that the normal purpose of their contained fluids is rather to maintain separation of surfaces than to relieve friction. So, too, the single-layered, non-vascular arachnoid bears a very doubtful relationship to the thoracic and abdominal membranes in either its histology or its normal or morbid behavior. And when we find an instructor in a prominent medical school proclaiming that "The nasal mucous membrane is a serous membrane," interrogation is paralyzed, and all hope of definition is abandoned.

The similarity of the original structure of the pericardium, pleura, and peritoneum—with its offshoot, the tunica vaginalis testis, is taught by the embryology of the pleuro-peritoneal cavity, and confirmed by the fact that in sundry cases of arrested development two or more of these remain in intercommunication; and if in perfected evolution any differencing of such structure occur, it may be assumed to entail a difference of function. Of course, the consideration of structure here intended is not confined to the old anatomical description of a "serous membrane" as composed of a stratum of squamous cells superposed upon a "structureless basement membrane," but must include all tissues that are tributary to the purpose served.

All three of these sacs consist mainly of interwoven connective tissue bundles and elastic fibres, lined by endothelial cells, and of a "subserous" connective tissue layer of varying density wherein are contained such blood-vessels, nerves, and lymphatics as they may respectively possess; in all the parietal is thicker than the visceral layer, which is more or less intimately associated with the invested viscera; all are moistened by fluids, of the nature and mode of production of which the present state of our ignorance leaves us in troublous uncertainty. Once, a similitude to blood-serum gave the membranes their name; later, a nearer analogy to blood-plasma was discerned; and in both instances the physical phenomena of osmosis were invoked in explanation, the synovial sacs being drafted into a separate regiment because the viscidity given to their contents by "synovine" argued a secreting power of their endothelium—as if any living cells could refrain from modifying the character of the blood-constituents with which they have to deal; still later it has been asserted that the osmosed or secerned fluid is identical with lymph, with the somewhat important omission of the lymph-corpuscles, and our "serous membranes" are re-baptized as lymphatic sacs.

But beyond their general conformity, each has certain peculiarities. The external surface of the pericardium and the costal aspect of the pleura are covered by a tougher fibrous lamella than is found in the parietal peritoneum. The vascularity of the pericardium is shown, not only by normal anatomy, but by its "red velvet" appearance when acutely inflamed. The pleura, though in less degree, is well supplied with blood, especially in its pulmonary layer. Both have numerous nerve-filaments. Both seem—like the synoviæ and bursæ—to subserve in health principally the office of lubricating apposed surfaces in nearly constant motion.

Turning now to the peritoneum, the first difference that strikes the eye is in its mechanical distribution. While the only noteworthy pleural fold is the ligamentum latum pulmonis, a large part of the peritoneum is devoted to suspensory uses, or forms extravagant pouches; the ligaments of the liver, spleen, uterus; the mesenteries; the quadruplicature of the greater omentum, interposing an apron between the parietal and visceral layers and inclosing a separate cavity of its own; these and minor foldings and pockets give an enormous extent of endothelium, the stomata of which lead in most places to a loosely meshed connective tissue, rich in lymph-spaces and lymphatic vessels. Its blood-supply is scanty, its nerves few, and these chiefly in the omenta and mesenteries, the latter bearing the intestinal lymphatics and mesenteric glands. Many subserous lymphatics of the liver, especially those surrounding the gall-bladder, conduct to glands in the gastro-hepatic omentum; others, originating in the muscular coats of the hollow viscera, have been traced in the sub-peritoneal tissue. In short, the peritoneum offers a far more elaborate absorbent apparatus than any other of the membranous sacs, and to this its mere lubricating office is apparently subordinate. Experiments have demonstrated the rapidity with which injected liquids are imbibed, and the possibility of maintaining nutrition by this means.

In women, an additional channel of invasion exists in the Fallopian tubes, beside the communication of the lymphatics of the broad ligament with those of the uterine body, and the increase of the latter during pregnancy.

Question 2. Do pathological and clinical considerations warrant the separation of cases of acute diffuse peritonitis into different classes, some infective, others not so?

In a vast majority of cases of peritonitis the morbid process begins in the sub-peritoneal connective tissue of the visceral layer, the virtual continuity of which with the connective tissue stroma of the invested organs, and its lymph-spaces derivative from them, offer facilities for either direct extension of common inflammation or transference of septic products, thus affording ground for a distinction between at least two classes of pathic conditions secondary to local visceral disease. But in addition to these we have cases in which the inflammation is excited by mechanical or toxic agents operating immediately upon the peritoneum; others wherein it takes rise from lymphangitis or general septicæmia; still others, such as those sometimes called "idiopathic," of which the pathogeny is not always discoverable. Here, again, the grouping of infective and non-infective is pathologically and clinically manifest; but we know—without knowing exactly why—that, especially in what may be termed the surgical category, a case may occasionally transfer itself from the milder to the graver sort.

The effusion in peritonitis, as in pleuritis, may be plastic, sero-fibrinous, purulent, or ichorous; and the character of it seems to depend more upon the ætic factor than upon the intensity of the inflammatory process—of the real nature of which we know little or nothing. A mere adhesive film may be produced where vascular injection and subserous infiltration are marked; a profuse sero-fibrinous fluid may be poured out where at most an opalescence of the membrane is discernable; while in septic peritonitis, particularly in puerperæ, Rokitansky first called attention to the amount of toxic, disorganized exudates with hardly perceptible reddening or vascularity.

The plastic form is oftenest seen in peritonitis by extension of aseptic inflammation from subjacent organs or by "contusion," which, in view of the now notorious tolerance of pretty rough handling by the peritoneum, I am inclined to regard in most instances as nearly the same thing. The exudate may become organized into bands or more or less adherent layers of varying extent, or create papillary or dendritic roughenings of the surface, or its redundant cell elements may degenerate into pus, giving rise in some examples to a secondary infective process, in others remaining "laudable," to undergo fatty change and be absorbed, or, losing their liquid part, to be calcified.

The more abundant sero-fibrinous effusions, frequently observed in cases arising from exposure to cold and damp, from fæcal impaction, from strangulated hernia, etc., may, under favorable conditions and judicious treatment, be rapidly and completely absorbed, or, as in the preceding class, may result in adhesions, or even in suppuration.

Purulent peritonitis is common from mechanical or chemical irritants, or from putrid infection; as in perforation, rupture of the urinary bladder, operation for imperforate hymen after puberty, septic or suppurative pelvic disease in women, etc., as well as from the above mentioned degeneration of more innocent exudates; and in children the proclivity to pus-formation in peritonitis is greater than in after life.

I shall not advert to the still waging controversy concerning the origin of pus and other cell-elements in these exudates farther than to say that the exclusive ascription of all of them to the migration of leucocytes does not seem to me to be sufficiently justified. The leucocytes in their origin are embryonic connective tissue cells, proceding apparently from the peripheral juncture of the two layers of the mesoblast. Even in mature life, according to our present uncertain doctrine, they are newly formed in the bone-marrow, spleen, and lymphatic glands, and probably in other unknown organic laboratories. All protoplasm, unhindered by a rigid limiting envelope, possesses, as far as comparative biology teaches us, amœboid movement; and I have yet to be convinced that "wandering" connective tissue corpuscles are necessarily lost leucocytes which have strayed from a distant intra-vascular home, or that new growth of connective tissue is essentially dependent on leucocytic emigration. Although pus corpuscles are unquestionably enfeebled, we have no positive authority for declaring that they are "dead leucocytes." In the case of peritonitis, particularly, the enlargement of the endothelia, the active subdivision of their nuclei, and the appearance of multitudes of new cells in their place, are noted by careful investigators. In fine, not much accurate progress has been made since Waller, nearly half a century ago, showed the impossibility of a scientific discrimination between the leucocyte, the pus corpuscle, the granulation cell, and, I would add, the primitive connective tissue corpuscle. It will also be noticed that I am not prepared to accept the "microbic" origin of all inflammation.

Question 3. What part do microörganisms, or the products of fermentation caused by them, play in the pathogeny of different forms of acute diffuse peritonitis?

As bio-chemistry has trodden on the heels of bacteriology, the intrinsic and immediate maleficence of particular "pathogenic" microphytes has been discussed with increasing skepticism, and we have learned that chemical products of their reaction upon an appropriate environment, or of their own decay, are the real morbific agents. Furthermore, there is reason to believe that the nature of the material on which they act is an essential factor in the property of the product, and Vaughan's experimental research confirms the opinion entertained by several observers, that microphytes differing in form and in susceptibility to staining reagents may cause the development of poisons similar, if not identical, in effect. Beside the alkaloidal ptomaines or "toxines," proteid substances or "toxalbumins" have also been isolated and their virulence demonstrated. According to Büchner, however, very few of these products are capable of exciting suppuration, which he attributes to what he calls "bacteria-proteins," arising from the plasma of the dying or decadent microphytes themselves, and chemically resembling the vegetable caseins.

We have learned, too, that without bacterial intervention toxic compounds may be formed within the body; that leucomaines are not only producible by perverted action of the living animal cells, but result from many of the physiological processes of metabolism; that the very peptones of normal digestion are poisonous if introduced directly into the circulation; that the misbehavior of our own tissue-elements, or the defective elimination of the waste-products of their activity, may do nearly as much mischief as an exogenous bacterial virus. Diminished

resistance or degradation of the cells, moreover, facilitates microbial invasion and multiplication, and converts the patient, so to speak, into a "culture-medium."

Most of the infective forms of peritonitis are probably occasioned by the products of bacterial fermentation, and these products may apparently be elaborated by various saprophytic microörganisms. Examples are found in peritonitis from dirty penetrating wounds, from perforation or laceration permitting the ingress of fæcal or purulent matter, from entrance of decomposing material from the uterus and Fallopian tubes, from general septicæmia, etc. But there are cases presenting somewhat similar phenomena, which are perhaps attributable to endo-somatic poisons, generated or accumulated in the disordered tissues. In intussusception or strangulation of any kind, in severe bruising without external wound or laceration, where circulatory disturbance leads to perversion of nutrition or to molecular necrosis, the conditions exist for incidental noxious synthesis.

The intense and rapidly diffused inflammation excited in numerous instances by intraperitoneal effusion of urine from rupture of the bladder through its serous investment, is not easily to be classified. On the one hand, normal urine, unexposed to air, is aseptic; on the other, none of its ordinary ingredients is known to be violently irritant; in fact, it is the ancient mariner's favorite collyrium for conjunctivitis. Even if the conversion of its urea into ammonium carbonate were chemically imaginable in these circumstances, the latter salt, in much stronger solution than is possible in urine, has been tested upon animals, by intravenous injection and otherwise, with only the temporary manifestation of its tetanizing influence. There is some evidence that urine may be absorbed by the peritoneum, and more that its prolonged presence in the serous sac does not always induce inflammation. Whether a septic ferment is imported, or a proteid or leucomainal poison concerned in such cases, is a problem for future bio-chemistry to solve.

Question 4. What are the means of differential diagnosis between various forms of acute diffuse peritonitis; and what the prognosis in each?

If we discard the too long misused adjective, "idiopathic," as applied to peritonitis, it is evident that diagnostic inquiry must often take a wide range to discover the originating disorder; and in some instances—such as those arising from incarceration, non-perforative implication in typhoid fever, nephritis, etc.,—the prognosis depends rather on the primary disease than on the peritoneal involvement. Even where peritonitis, *per se*, constitutes the principal peril to life, prognosis—as in other pathic conditions—is a variable term, changing with every advance of therapeutic art.

It is scarcely needful in addressing an audience of experienced physicians to remark that the early diagnosis of peritonitis is not always as facile as some writers represent it. Initial rigor and rapid rise of temperature are frequently absent, and when they do occur are commonest in cases caused by septicæmia or by exposure to cold; cases with totally opposite prognosis. Indeed, there are instances in which the whole course of the disease is nearly or quite afebrile, and others wherein the temperature may be subnormal. The pain and tenderness, ordinarily so characteristic, may in rare examples be trifling, as if the peritoneum retained its natural insensitiveness despite the inflammatory provocation. Nausea and vomiting are seldom inceptive symptoms, and may exist in other disorders, as in enteritis or intestinal occlusion, which are among the not infrequent causes of peritonitis; and constipation falls in the same category. Tympanites is an indication that inflammation and infiltration have already made much progress, and, in muscular patients, may not appear until near the end. Fluctuation is only discoverable where an abundant liquid exudation has taken place. Oliguria and dysuria are neither peculiar to peritonitis, nor are they so marked in this when exudation is slight and vomiting scanty or absent. An expert diagnostician may now and then find himself with little more than the physiognomy and decubitus of the patient to guide his first opinion. Granting that such cases are exceptional, it is nevertheless important to bear in mind their existence.

Still more difficult is it sometimes to determine when diffuse peritonitis supervenes upon preëxisting maladies or traumatism, where the symptoms of the primary lesion simulate or mask those of the secondary affection. As a rule [with not a few exceptions], the marked increase and unremitting character of pain, the change from restlessness to immobility and relaxation of the abdominal muscles, the rise of temperature, the quickening of the pulse, and the onset of vomiting [if not previously present], will furnish the earliest warnings. In many surgical cases, fortunately, this difficulty of diagnosis is of less moment, because the lesion itself justifies operative interference, which thus becomes prophylactic.

The rapid course of traumatic peritonitis renders its prognosis at all times very grave—worse if there be wound of the intestine or other abdominal viscus. In scarce instances, limiting adhesions may form a barrier of safety; but in others the exudation speedily assumes a sero-purulent or ichorous character, and life is soon extinct. Here, surgery should be occurrent against the coming ill, not awaiting its arrival.

Contusion in minor degree oftenest, probably, primarily affects an invested viscus, leading thence to a local peritonitis, which may become diffuse, as in other examples of extension from simple visceral inflammation. Sharp pain and tenderness do not appear until a considerable time—several days, even—after the accident, beginning at the injured point and gradually spreading. The exudate is ordinarily plastic or sero-fibrinous; the prognosis not unfavorable if the visceral inflammation be resolved. If severer contusion cause lesion of the peritoneum itself, the onset of inflammation is more sudden and the extension more rapid; the prognosis—especially if any hæmorrhage ensue—less hopeful. If crushing violence produce actual rupture of viscera—as of the stomach, intestine, liver, kidney, bladder—with effusion of blood, fæces, or other contents, the diagnosis of the fact, though not always of the seat of the solution of continuity, is generally self-evident; but it is well to remember the cases recorded from time to time since Bransby Cooper's day, in which the severest lesions of this kind were not immediately followed by any characteristic symptoms. The supervention of fatal peritonitis upon such hurts was almost inevitable before modern surgery with disinfectant methods gained courage to attack the causes; and even now the chances of recovery are small. The

diagnosis of peritonitis in the very few instances arising from rupture of the spleen or of an aneurism has hitherto been made post-mortem, when prognosis had lost its interest as a question for practical consideration. Abscess usually can, and should, be detected and relieved before its rupture into the peritoneum.

Ulcerative perforation of the peritoneum commonly gives rise to a quickly diffused inflammation, following collapse induced by the accident, the symptoms being similar to those produced by rupture. If the perforation be small, and the intrusion of the contents of the digestive tract very scanty or gradual, limiting adhesions may form, or diffuse peritonitis may occur with few diagnostic indications of its advent. In most of these cases the determination of the exciting cause and of its situation must depend chiefly upon the recognition of pre-existing disease by the physician who has had previous charge of the patient; and every physician should be aware of the possible surgical outcome of a medical malady, and of the fatal mischief of delay when this possibility becomes an actuality.

Gastric ulcer occasionally, though seldom, may escape detection until perforation brings on a rapidly mortal peritonitis. Intestinal ulceration, on the other hand, is always difficult to diagnosticate in its earlier stages, and especially so when arising from uncommon causes. In malarial fevers accompanied by intestinal catarrh, ulceration or sloughing of the colonic glands, or even of Peyer's patches, may proceed to perforation, and the same result may take place in dysentery if the inflammation advance to suppurative disintegration of the muscular coat, the danger here, however, being foreshadowed by the markedly purulent character of the stools. Typhlitis with cæcal impaction—ordinarily of favorable prognosis—may possibly lead to perforative ulceration, as may also other mechanical obstructions. Perforation occurring as an incident of enteric fever hardly pertains to our discussion, since it is virtually irremediable by any present resources of our art.

The commonest source of perforative peritonitis is inflammation of that degrading reminder of our evolution from a herbivorous ancestry, the vermiform appendix, which, beside its direct attacks on the serous membrane, is at the bottom of about ninety per centum of the cases of perityphlitis. And the discovery of this condition is not always easy, for its course may be insidious, with normal temperature, little pain, absence of cæcal tumefaction, latency of all characteristic symptoms until the approach of death. I have seen a patient whose only apparent discomfort was obstinate constipation, without abdominal distention, with so little tenderness that he bore without inconvenience sufficiently deep palpation to detect slight thickening in the inguinal region and obscure fluctuation below, and yet incision revealed intense diffuse peritonitis with foul purulent exudation, the appendix perforated, and a fæcal concretion extruded.

Supposing that in cases of sudden onset, unheralded by prior ailment, the medical attendant has followed the stereotyped injunction to examine the ordinary hernial openings, the differential diagnosis of internal strangulations or occlusions is generally impossible except by exploratory section. Intussusception—commonly ileo-cæcal in youth—may be surmised from the local and often remitting nature of the initial pain and the accompanying dysenteric stools, and verified by palpation; but in the rarer instances where invagination occurs higher in the small intestine, the sense of touch is often baffled, and even if tumor be felt, its cause cannot be discriminated from other sources of occlusion. In all such cases, purulent, and sometimes gangrenous, peritonitis is likely to result, and more than in other classes is prognosis linked with prompt treatment.

Fæcal impaction may induce peritonitis attended with little, if any, rise of temperature, tympanites, or pain, and therefore apt to be overlooked in its earlier stage. In the majority of instances, however, it occurs in the cæcal region, and an intermediate typhlitis is discoverable. If the cause be removed, recovery is likely. In cases ensuing upon renal or cardiac lesions or severe constitutional disorders, the issue is dependent chiefly on the originating disease.

In women, the prophetic discrimination between infective and uninfective inflammation of the peritoneum is more important than in men, and often harder to achieve. At best, extension from pelvic peritonitis is of graver presage than that arising from simple affections of abdominal viscera, except, perhaps, in the comparatively benign form which sometimes follows exposure during menstruation, and which has been theoretically ascribed to the intervention of perimetritis. But since peritonitis, like pleuritis, is occasionally induced in men by subjection to cold and damp, it is not always necessary to imagine a distinctively sexual factor otherwise than as increasing susceptibility, save where the menstrual flow is intentionally arrested. Salpingitis as a cause of peritonitis has assumed great prominence of late, and is undoubtedly the intermediary in many infective examples, the fatality of which has been much reduced by gynecological progress; the frequency of gonorrhœal invasion through this channel, however, is unreasonably overrated, even by some of those who stop short of Noeggerath's extreme views. We know that the unmistakably specific vaginitis very seldom spreads above the os internum; daily experience shows that the reliquial discharge of gleet (and, *a fortiori*, any casual serous or mucous secretion long afterward) fails to convey specific virus; and the "gonococcus" (or its twin Dromio) is not confined to gonorrhœal pus. Sepsis from a retained portion of the ovum, or metritis from mechanical injury, may lead to peritonitis after abortion, as in the puerpera there may be different pathogenic grades, of widely varying significance, from simple metritis to putrid absorption or to the mysteriously overwhelming septicæmia which may kill before an exudate has formed.

During infancy, the prognosis of peritonitis, from whatever cause arising, is serious in inverse ratio to age. When consequent to infection from umbilical phlebitis or gangrene, within the first few weeks of life, a fatal termination is inevitable. This dangerous period past, the exciting factors differ little from those in adults, but the peril of the resulting peritonitis in itself is far greater.

In these prognostic hints the immediate outcome of acute inflammation only has been considered, the occasional transition into a chronic form not concerning our purpose.

Question 5. In what respects are the therapeutic indications in acute diffuse peritonitis modified by the etiological factors?

It can never be too often reiterated that, while the

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naming of a pathic condition is a provisional necessity for registration, the given title very rarely conveys a therapeutic indication; and in the case now under deliberation it would be small loss if the word, "peritonitis," were relegated to the limbo whereto are already consigned the terms, "dropsy" and "paralysis," the latter of which, by the bye, has been misconnected—nosographically, if not etymologically—with the tympanitic distention resulting from œdematous infiltration of the intestinal walls, not from interruption of innervation.

The tendency to hang the panoply of medication on the peg of nomenclature has led, in turn, to the vaunting of venesection, leeching, mercurialization, antimony, quinine, hot fomentations, cold baths or ice-bladders, as remedies for peritonitis; and to-day a therapeutic disputation weighs the opposing claims of "treatment" by opiates or by cathartics, either of which may be indicated or contraindicated in particular cases.

In instances resulting from wounds, visceral rupture or perforation, when intensity of pain immediately menaces the heart's function, morphia is temporarily useful; but where surgical measures are so imperatively demanded, farther reliance on its beneficial influence is to be deprecated; and, as in acute strangulations, few surgeons of the present day would delay operation until diffuse peritonitis declared itself. In intraperitoneal rupture of the bladder, lives were saved by suture of the vesical rent and ablution of the abdominal cavity in the early days of clean ventral surgery. In intussusception—granting that there are rare recoveries without peritonitis—the risk is so great that operation as soon as impaction becomes evident is preferable to waiting for the sloughing of half a yard or so of the intussusceptum, or wasting time with ponderous doses of quicksilver or rectal inflation with the kitchen bellows. Wherever, in fine, peritoneal inflammation is manifestly caused by penetrating or strangulating local lesion we should no more think of treatment directed to it alone than we should attempt to cure the inflammation produced by a splinter in the skin without removing the splinter. Another justification for operative intervention is the advent of purulent effusion; but here diagnosis is often at fault, since the chills and fluctuations of temperature ordinarily indicative of suppuration are not usually present. In all such surgical examples there is no longer need for the second alleged purpose of opiates; namely, to favor the formation of adhesions, or to secure their preservation by arresting peristaltic action.

But in other than surgical cases this bugbear of "peristalsis" is inconsistently dreaded; for when tympanites occurs peristalsis ceases. In peritonitis from non-perforative typhlitis or coprostatic obstruction elsewhere, continued constipation itself increases the chance of ulceration and possible perforation; and some of those who most oppose cathartics advocate in such conditions copious and oft-repeated enemata, which, if they act at all, must do so by exciting peristalsis. Small "persuasive" doses of calomel at an early stage will often happily prepare the way for slowly administered enemata; and opium, if used at all, should be limited to moderating pain. In cases of this sort less attention than it deserves has, I think, been given to belladonna, which deadens the sensibility of the nerve-endings and so allays pain and consequently diminishes reflex irritability, tends to relieve constipation, and supports the heart, embarrassed by pulmonary compression as well as by its own enfeeblement.

Opium, at all events in narcotic doses, is also contraindicated where nephritis exists; and, on account of its influence in lowering the already lessened respiratory oxygenation and retarding eliminative processes, is not rationally applicable to cases where peritonitis is an epiphenomenon of general septicæmia, and where pain rarely calls for an anodyne. In such cases, oftenest in puerperæ, fœtid diarrhœa commonly coexists; the bowel is freighted with putrescent matter, and mild cathartics and intestinal antiseptics are advisable rather than pharmacological peristaltic paralysis. The same argument obtains wherever decomposition or abnormal fermentation of the intestinal contents lends added danger to peritonitis, as in non-perforative dysentery, some forms of typhlitis, and other similar conditions. The relief of meteorism by calomel [or probably by that portion of it converted into bichloride] was noted many years ago, and in the newer class of remedies represented by salol and resorcin we may find useful therapeutic agents in instances of this kind.

It is in "the early stage of peritonitis following operations" of abdominal section, according to Lawson Tait, that the threatened inflammation is most certainly arrested and a fatal issue averted by "the prompt use of the turpentine enema and the Seidlitz powder;" but in view of the obscure diagnosis of this "early stage" [no well-marked symptoms, beyond a rise of temperature, being often noticeable], I have wondered if some, at least, of these cases were not "fever of non-elimination," occasionally mistaken for septic infection. In other instances, as Dr. A. F. Currier has suggested, neglect to properly replace the omentum, or injury thereto in separating adhesions or otherwise, may be the starting point of peritonitis; but even here I believe that the chief reliance of gynecological operators is on saline cathartics. The farther discussion of this topic, however, I shall leave to those whose experience in evisceration is greater than mine.

Where purulent exudation is present or likely to occur, quinia, retarding leucocytic migration, is indicated; and its tonic and possibly antiseptic action may render it serviceable in other circumstances. In all instances where the "tendency to death" is by exhaustion, concentrated and easily assimilable nourishment, and stimulants when needed, are more valuable than drugs; and in the frequent virtual abolition of the function of the upper part of the digestive tract, we should not forget Anstie's rectal alimentation with strong meat broths, under which pain and vomiting are sometimes allayed, and the circulation strengthened.

In the uninfective forms of peritonitis, vascular derivation to the surface by turpentine stupes and light warm fomentations is more philosophical than the prolonged and depressing refrigeration by ice-coils recommended by some disciples of the German school. High pyrexia is rarely maintained long enough to require artificial abstraction of heat; on the contrary, if the issue become grave, a lowering of temperature is a common evil omen. This asthenic proclivity should also absolutely preclude cardiac depressants, such as antimony, aconite, veratrum viride, or the more mischievous group of "antipyretics" headed by the patented "antipyrine."

The clinical details of treatment in different classes of cases will surely be so thoroughly set forth by those who are to take part in the ensuing discussion that I shall not trespass further upon your time by adverting to them. My task has been accomplished if I have sufficiently emphasized the general proposition that the therapeutic indications are not only modified by, but altogether dependent on, the causative factors.

OPHTHALMIC SURGERY.

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He who would not be considered a bunglar in ophthalmic surgery must give the subject very careful attention. The mechanism of this branch of surgery is very fine and intricate and a large experience in its practice is necessary to surmount the various difficulties with which it is beset. It is both an art and a science. To practice it successfully as an art presupposes a great amount of training of the hand, and to practice it successfully as a science renders it an imperative necessity to be thoroughly and practically acquainted with the various diseases to which the eye is subject either directly or remotely. The complexity and the delicacy of structure of this organ render it extremely tolerant of surgical interference. The results sought to be obtained by a surgical interference with it are two-fold, surgical and optical. In a purely surgical sense an operation is said to be a success when it has been properly and skilfully executed, and the operator has done precisely what he set out to do, and the wound has successfully healed without having undergone any protracted or destructive inflammation. Thus its surgical success may be said to be an accomplished fact, but its optical success may be a total failure. For example, a cataract may be successfully removed, leaving the refracting media of the organ completely transparent without having produced any visual power by reason of the diseased condition of the retina and optic nerve, and hence the patient received no benefit from the operation.

With these prefatory observations I desire to call attention next to the means by which the various manipulations in eye surgery are to be accomplished. First I shall notice the hands with which the instruments are to be employed.

Physiologically speaking, the hands of the good operator must possess a high degree of *muscular sense; i. e.*, they must accurately feel and estimate the precise degree of force they exert in each and every direction. It is important that the hands possess the power of consentaneous movement, and be capable of simultaneous direction. They should act smoothly and harmoniously together as a single organ for the accomplishment of a common object. The operator should have both most completely at the command of his will. If he be right handed both his hands, so to speak, should be right hands, so that he can be perfectly indifferent as to which one he employs for the direction of cutting or other instruments. And last, but not least, his hands should be perfectly steady.

In a highly cultivated *muscular sense*, those essential qualities of precision and gentleness in the use of the force to be employed will always be at the operator's command. Occasionally it happens in doing an iridectomy, one of the most difficult operations properly to be done upon the human eye, that the reflex action of the superior rectus muscle rolls the globe upwards and carries the incision under the upper lid, which makes it impossible for the operator to seize the iris and draw out the piece he wishes to excise. It is under such circumstances that a competent assistant becomes necessary. I mean by a competent assistant, one whose *muscular sense* has been educated. To every competent and skilful operator it is very embarrassing to have an assistant with whom he is not acquainted, since if his *muscular sense* has not been sufficiently cultivated he will not infrequently grasp the conjunctiva with the fixation forceps too rudely and suddenly, and exert more traction than is necessary to overcome the contractile power of the superior rectus. By so doing there is danger of gaping the wound too much and thereby producing a prolapse of the vitreous, and perhaps even a dislocation of the lens. The force that is exercised gently is not necessarily slowly, but rather lightly in the beginning, and gradually increasing until the exact amount is exerted. The best example, perhaps, that is to be found of high *muscular sense* development is that which has been cultivated by the fine violin player. Who could listen to that celebrated violinist, Ovide Musin, who has on several occasions appeared before Saint Paul audiences, and held them in a bewildered astonishment or transported them into ecstacies of delight, without remarking his wonderful development of *muscular sense*, coupled with his almost phenomenal genius.

In most of the arts a highly cultivated *muscular sense* is an indispensable requisite to the artist.

The same principle that applies to the use of the fixation forceps is applicable in a greater degree, even, to the use of all cutting instruments when employed in and about the eye. In the use of a cutting instrument it should be placed upon the precise point desired to be penetrated and the force should be applied gently at first and increased in exact proportion to the resistance, but without any increase in the speed of the instrument, so that when the resistance ceases the instrument may stop or at most its movement be not in the least accelerated, and completely under the control of the operator. In the healthy cornea of the young greater force is required to penetrate it with a cutting instrument than frequently happens in that of the aged, whose cornea has perhaps become soft, thin and flabby from disease or age. An accutely developed *muscular sense* will at once detect the difference. If this difference is incapable of being appreciated by the operator, he might carelessly drive the point of his instrument into some part of the eyeball that would prove injurious, if not disastrous.

The great progress that has of late years been made in operative ophthalmic surgery renders the consentaneous movement of both hands almost an absolute necessity in order to practice it with propriety and success. The fixation forceps, for example, are used to steady the eyeball, or to move it against the edge of the cutting instrument. I have occasionally seen novices become almost unconscious of the use of the forceps and forget them to such an extent as either not to fix the ball with them or to make an undue or even a dangerous amount of pressure upon the ball. He would at the most critical moment seem to think he had but one hand, when conciousness should have been equally distributed to both.

I have seen very good operators who were not am-

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bidextrous, either from their inability to acquire it or from a lack of painstaking training. The Germans instruct their pupils to stand in front of the patient when doing a cataract operation, while the English instruct them to stand behind the recumbent patient. To practice either method exclusively requires that one should be ambidextrous. Therefore, to avoid the labor of acquiring ambidexterity it is necessary to become accustomed to both methods. I think it is less awkward to stand behind the recumbent patient for operating upon either eye. To do this of course presupposes that the operator can use his left hand with the same facility as the right, since on account of the nose being in the way, it is necessary always to make the puncture in the globe from or at the temporal side. Therefore, in operating upon the right eye the right hand must be used, and on the left eye the left hand. The same training that enables one properly to use the fixation forceps with the left hand should enable him to use a cutting instrument sufficiently well with the same hand.

To the majority of persons the acquisition of ambidexterity would not be nearly so difficult as they frequently imagine were they to engage for a short time in the proper kind of training.

Writing and drawing with the right hand are undoubtedly the means by which it becomes educated to execute finer and more complicated manipulations than the left. To overcome the awkwardness of the left hand and to educate its *muscular sense*, practice drawing with it daily by the use of a pencil and paper until a curved line or a circle can be drawn with it as easily and accurately as with the right. Having accomplished this much, take a pencil in each hand and draw with each at the same time similar straight lines, curves, circles and angles, and in this way practice and cultivate the consentaneous movements of both. In the commencement it will be more or less difficult, like all beginnings. The left will be more limited in its movements and less graceful. It will be inclined to make the circles smaller and slower, the angles less accurate and the lines more crooked. Continue this practice from day to day, until the movements are as nearly alike as possible. Having mastered this step, take two fine steel pens of equal quality, one in each hand and practice in the same manner as with the pencils. By this means the degree of pressure can be readily determined by the thickness of the stroke. Practice this until the pressure with each hand is known to be the same. I found this to be the most difficult exercise in which to acquire a tolerable degree of proficiency, while some may find it the easiest. This demonstrates the sound principle that to master a complicated mechanical procedure it is better to learn it by piecemeal. Thus the boy, when he commences to play the violin, is first instructed to draw the bow across the open strings and at right angles to them for an hour or two each day, until he is enabled to produce a clear, full tone. He then commences to press the strings against the finger-board to produce other tones, and so on, from step to step, combining at the same time all he has previously learned.

After the hands have become accustomed to work together by practicing the drawing exercises with equal speed and force, the mask can next be taken up. With this one should first familiarize himself with the angles of the face in connection with the position of the hands in the various operations. The instruments to be employed should be held by the thumb and the two first fingers like a pen, while the remaining fingers and lower part of the hand should rest upon the brow the same as it rests upon the paper in writing. Let the position of the hand be such that the fulcrum will always rest in the same place, so that the movements may be made simply by extension and flexion of the fingers as in writing. This enables the learner to touch the nasal or the temporal side of the orbit without shifting the position of the hand, and to execute a lateral or sawing movement across the orbital space. After having practiced this for a considerable time, fill the orbits in the mask with some substance to represent the eyeballs. A wooden ball covered with some soft material, as white leather, will answer. Take a pen and ink and draw a circle around it to represent the sclero-corneal junction, then with the pen practice making fine dots around the outer edge of the represented cornea as near the line as may be without touching it, and at regular intervals. Practice this until the dots can be made with precision, accuracy and rapidity. The wooden balls may now be removed and the orbits filled with small rubber balls. Upon these practice puncturing with the needle and the cataract knife at or near the sclero-corneal junction, using the fixation forceps with which to steady them. Observe always and estimate as nearly as possible the degree of force required to puncture and incise, and the direction of the puncture. Finally fill the orbits of the mask with fresh hog eyes and perform upon these daily for a number of weeks all steps of the principal operations. Practice with the left hand more than with the right, so that both may act when necessary as one right hand.

Practice of this kind by the oculist is time well spent, for when he comes to the real work he will be regarded by his confrères as a skilful operator and by the laity as a man endowed with remarkable skill and superior mental powers, since what the people in general call genius has been, in nine hundred and ninety-nine times out of a thousand, the result of perseverance and painstaking industry.

It has been my lot more than once to see a blundering novice attempt to do an operation upon the human eye, when it was self-evident he knew almost next to nothing about the instruments he was handling. Such a spectacle is painful indeed, for it will be the merest accident if the poor trusting patient is not doomed to live the rest of his days in continual darkness. It is very expensive to our friends to recommend a novice of this kind, since his self reliance is not infrequently founded upon "cheek," "society hustling," and his capacity to drink hot punch and be a hale fellow well met, rather than upon knowledge and skilful manual dexterity. It is unfortunate for a community that such a man should be heartily endorsed as an oculist, as is frequently the case in some of our western towns and cities. Pardon me for emphasizing the fact that I have seen such would-be operators and have known them to close the door when their patient left their office, and remark to a near friend, "I made that patient pay my office rent to-day." The community that unwittingly furnishes their eyes in order to educate such a man is very unfortunate indeed, since he will prove himself to be an apt scholar if he does not ruin more than a bushel of their eyes in his blind shop before he becomes a tolerable operator.

Of the innumerable variety of instruments that have in bygone years been devised, I shall only refer in a general sense to a few of the useful ones. It would be a waste of time and space to attempt even a simple enumeration of those that are worthless and almost forgotten, the creations of some awkward and ignorant ophthalmic surgeon. I once saw a collection made by some crank in Vienna; they were more amusing than instructive to the student of ophthalmic science; they were the representatives of inventive awkwardness. They seemed to be devices for the purpose of bridging over those defects in the surgeon that should have been cured by perseverance and painstaking labor. They were, so to speak, dead instruments. The living instruments are made by the inventive genius of some skilful mechanician who had the keynote given him by some skilful surgeon. They do what the fingers alone cannot do or be spared to do. The fingers even of the skilful assistant could not in a cataract operation be trusted with the work of holding the lids apart, since they would not only be in the way, but would exert a dangerous pressure on the eyeball; therefore the stop speculum was devised.

The use and form of the various cutting instruments and blades of different shape, of hooks, iris forceps, etc., etc., require no special mention or demonstration. They should be adapted to the work they were designed to perform. I wish, however, to call attention to the scissors in the left hand, since here they require a special form of manipulation. The ordinary scissor is so constructed that when held in the right hand it is very easy to cause the edges to oppose each other by simply flexing the finger with which the upper blade is held. This same movement, when they are used by the left hand, draws the edges away from each other. To obviate this, pass the thumb into the upper loop and the ring finger into the lower; then bring the middle finger in front of the lower loop and make firm pressure while the index finger presses firmly against the lower blade in front of the joint. Held in this manner they will cut as evenly and well as when held in the right hand. The iridectomy scissors may be held in the right hand for either eye, but for strabismus operations on the left eye and for excising skin from the left eyelid, it can be performed with more neatness and dispatch with the scissors in the left hand.

It is proverbial for the bad workman to quarrel with his tools, and it is equally so with the bad surgeon, for he is always complaining about his instruments. The incompetent and awkward surgeon is always inventing or devising some instrument or means by which he may be able, as it were, to bridge over his own defects. His awkwardness and incompetency are frequently bringing him to grief, and the contrivances he devises with which to prevent in some degree his disasters, he calls an invention, and is proud of it, like those who "glory in their shame." Some time since I saw a very curious strabismus hook. It contained a small belly-shaped blade in the concavity of the hook. The blade was connected with the handle of the instrument by means of a delicate rod or slide. This enabled the operator, after hooking up the tendon, to give to the blade a sawing motion against the tendon till he secured it. This was either the contrivance of some bungling novice, or of some good mechanician who had been kindly trying to help the incompetent operator do one of the simplest and easiest operations in ophthalmic surgery. One who has skill enough to use a pair of scissors and an ordinary strabismus would have no use for such a device. Do not understand me to cast any reflections on such instruments as Beer's or Graefe's cataract knives, or on many other valuable instruments that are to be found daily in every good ophthalmic surgeon's armamentarium. They were men who were pioneers in ophthalmic surgery, and they were obliged to devise instruments that others have christened after the inventors because of their value and practicability. It may be said, however, that as a general rule, the surgeon who is always devising some new instrument is a bungling, unreliable operator. He will always have his peculiar scissors, his peculiar hook, his peculiar this and his peculiar that, and he will very ostentatiously christen them after himself. Should I ever be so unfortunate as to require an operation on my own eyes, I certainly should not select such a man, nor would I think of sending any one to him in whom I had the least personal interest. I should much prefer the one who has never invented an instrument of any kind, and has demonstrated to me that he can skilfully use such as have been devised for him by others. The good surgeon needs but few, well constructed instruments.

A word in regard to fixation forceps, of which there are two kinds; one with a rather blunt end when closed, and having but one tooth at nearly right angles on one blade, and on the opposing blade two similar teeth, between which the single tooth is received. The other contains but a single sharp, fine tooth on each blade, which project, say almost a half line beyond the body of the blade, and when the instrument is closed the teeth cross each other closely.

The former can be used on the young and healthy conjunctiva without breaking loose and lacerating the conjunctiva, which might happen at a critical moment. The latter will pierce the sclerotic, and is the one to be used when the conjunctiva is tender and brittle from age or a prolonged inflammation.

And last, but not least, for good operating an absolutely steady hand is an indispensable requisite. The good practical surgeon marks out all the various steps of the operation before commencing; in other words, he performs the operation mentally. This is especially applicable to eye surgery, and the operator should not deviate the smallest fraction from his previously determined course. After making the incision, he may desire to introduce between the lips of the wound a blunt instrument, a hook, a closed forcep or some other instrument, and if his hand is unsteady, he will be most certain to bruise the surrounding delicate parts, and cause an escape of vitreous perhaps, or a premature loss of aqueous. Steadiness is a physical attainment, and may be acquired by proper training. There is, however, an unsteadiness that results from mental causes. The over-anxiety to do right results from a want of confidence or self-reliance, and can only be cured or remedied by the growth of confidence and the gradual influence of success.

138 East Sixth St.

IT IS said that the chemist of the New York Board of Health has discovered one thousand and forty-five specific nuisances on the Croton water-shed, whence comes the water supply of New York city.

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ELECTRICITY AS A THERAPEUTICAL AGENT IN THE TREATMENT OF HYPERÆMIA AND CONGESTION OF THE PULP AND PERIDENTAL MEMBRANE.

BY JOHN S. MARSHALL, M.D.,
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Electro-therapeutics in medicine and surgery has been developed to a considerable degree, and may be said to form a very large and important element in the treatment of certain forms of disease, while in dental surgery it has received but little attention; in fact, it is almost a negative quantity in dental literature.

Its application, however, in dental surgery, does not offer so broad a field for investigation, yet a study of its value as a remedial agent will be no less interesting than in other special departments of medicine, and when better understood will, I believe, become an important adjunct to the means already at our command for the treatment of a considerable number of dental and oral diseases.

I have chosen as the topic of this paper, two out of several pathological conditions of the teeth to which the various forms of treatment by electricity may be beneficially applied. The choice has been governed by a desire to present forms of disease upon which these beneficial results could be most easily and certainly demonstrated.

An exhaustive treatment of the subject at this time and place will be out of the question. I shall, therefore, refrain from generalities, and place my subject before you in outline only, leaving your good sense and experience with disease to fill in the details.

Hyperæmia and congestion of the dental pulp from caries, thermal shock, chemical and mechanical irritants, and traumatic injuries, etc., resulting in odontalgia, are among the most common of the diseased conditions found in the oral cavity, and many times the most difficult to control by the methods of treatment usually adopted, without devitalization of the pulp.

Hyperæmia and congestion of the peridental membrane from constitutional causes, such as rheumatism, gout and pregnancy, and certain local causes, like excessive malleting, undue wedging, change of position of the teeth in regulating, and other surgical or traumatic injuries, resulting in severe pain, is many times quite as difficult to control.

These forms of disease will best serve our purpose in this attempt to demonstrate the therapeutical value of electrical and galvanic currents in the treatment of local disorders of the oral cavity. The object, of course, in the treatment of these forms of disease is, in the first class, to relieve the congested condition of the blood-vessels and to preserve the vitality of the pulp; in the other, to arrest the inflammatory symptoms short of the suppurative process or of the formation of adventitious tissue.

How these much to be desired conditions can be obtained, is a question that has often troubled the mind of the thoughtful dentist, and while I do not claim to have made any new discovery, I am confident that the galvanic current, if judiciously used, will prove to be a valuable aid in the treatment of all forms of inflammation of the pulp and peridental membrane, and many other conditions which further experience and experiment will demonstrate.

It is a generally known fact to medical electricians, that local hyperæmia and anæmia can be produced at will by the influence of the negative and positive currents of electricity; and that resorption of certain inflammatory products and new growths can be promoted through their stimulating effect upon the absorbent organs.

It was the knowledge of these facts which led me to investigate the value of the application of these principles to the treatment of congestive conditions of the dental pulp and peridental membrane.

The first case upon which I attempted to demonstrate these principles, which will serve as a good illustration, was a tooth in my own mouth, the history of which is as follows: The right first superior bicuspid had been filled with gold at the age of 20 years, but from poor manipulation had been refilled several times during the next fourteen years. Ten years ago the last of these fillings came out, leaving a large disto-approximal cavity, and the pulp nearly exposed. The tooth was exceedingly sensitive to the slightest thermal changes, to acids or sweets; it was therefore plugged with Hill's stopping. Six years ago this filling was removed with the hope of introducing gold, but the tooth was in such a sensitive condition as to seem unwise to introduce a gold plug; oxy-phosphate cement was therefore substituted. During the following night there were developed marked evidences of a congestive condition of the pulp. The next morning the phosphate filling was removed, and the cavity dressed with oil of cloves, and a solution of gutta-percha in chloroform was flowed over the bottom of the cavity, and refilled with oxy-phosphate cement. The symptoms, however, did not abate, but gradually increased in severity. I therefore determined to try the depleting effect of the positive galvanic current, and called upon my friend, Dr. Justin Hayes, of Chicago, with the request that this line of treatment might be thoroughly tried. The positive pole of the continuous galvanic current was applied to the tooth, and the negative pole to the carotid triangle of the neck on the same side. The strength of the current was graduated to my ability to bear it without discomfort, and the poles were allowed to remain in position for about half an hour. At the end of ten minutes there was a marked improvement in the symptoms, and at the end of the half hour all discomfort in the tooth had disappeared. During the following night the tooth again became uneasy, but a second treatment of twenty minutes the next morning completely relieved it, and from that time on, the tooth has caused me no annoyance. Three years ago the tooth was filled with gold at a clinic, by Dr. Roscoe F. Ludwig, at the International Medical Congress held at Washington, D. C. The pulp is still vital, but is no more susceptible to irritating influences than any other tooth in my mouth.

The marked success which followed the treatment of this tooth has led me to adopt the same treatment in several similar cases, all but one of which have responded to my entire satisfaction. This case was one in which there was not much hope of the treatment proving successful, yet it was tried as a forlorn hope. This history is briefly as follows: Miss J. E., aged 20, of frail, delicate organization, fair health, had been under treatment one year previously for

[1] Read before the American Dental Association, at Saratoga Springs, N. Y., Aug., 1891.

protrusion of the superior anterior teeth. The operation had been performed slowly and with great care, to avoid serious irritation of the dental tissues and alveolar processes, and the final retaining plates had been worn for about six months. About this time a slight discoloration near the gum of the right superior central was discovered. She came in great haste to know why this should occur. There had been no pain in the tooth, and there was no soreness to percussion; it was slightly sensitive to heat and cold, but this symptom was not so marked as in the adjoining teeth. My diagnosis was either passive congestion of the pulp, induced by the irritation in moving the teeth, or the formation of an embolus in the pulp vessels. Which it was I was unable to decide, and as there seemed to be no hope of saving the vitality of the pulp by the ordinary methods of treatment, the positive galvanic current was applied. In the treatment of this case, I called in council Dr. Plymon Hayes, of Chicago. On the application of the current to the neighboring teeth, three-fourths of a milliampère was all that could be comfortably borne, while the diseased tooth would bear just double this amount. This was due to the impaired vitality of the pulp. Daily treatments of twenty minutes each were maintained for a week; during the first three days there was a slight increase in the sensation of the tooth under the current, and the strength was reduced to one milliampère; after this, however, sensation seemed to grow gradually less, the current being increased to three milliampères without unpleasant response; the treatment was therefore abandoned, the tooth tapped and the pulp removed, and the case treated by the usual methods.

In the treatment of pericementitis not caused by septic poisoning from a devitalized pulp, it is, many times, of very great benefit. In these cases the positive pole should be applied to the gum over the roots of the affected tooth. Marked relief is often experienced in a few minutes, and often entirely relieved after three or four applications.

In a former paper, published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1889, I have called attention to the prevalence of hyperæmic odontalgia frequently accompanying pregnancy, as a result of impeded circulation in the lower extremities, and thereby causing general hyperæmia of the upper half of the body. The general treatment suggested in that class of cases was rest in the recumbent position and anodynes. I would now suggest as an additional treatment the local application to the affected teeth of the positive galvanic current.

With regard to the strength of the current, experience proves that from three-fourths to one and a half milliampères is sufficient in the class of cases so far mentioned, while the frequency of the sittings will depend upon the severity of the local symptoms and the nervous susceptibility of the individual.

As a rule, one treatment in twenty-four hours is all that will be required; in aggravated cases, two, and occasionally three, may be advisable, the duration of the sittings being from fifteen to thirty minutes.

As a means of diagnosis in obscure cases of the vitality or non-vitality of the dental pulp, I know of nothing so sure to demonstrate to a positive certainty these conditions as the electrical currents, both the galvanic and the faradic. In the more obscure cases, however, the faradic is superior to the galvanic, for if there is the slightest vitality remaining in the pulp it will demonstrate it instantly by causing a response in the tooth. It is superior in this respect to the transmission of light by the electric mouth-lamp, for many times when the condition is upon the border line between the life and death of the pulp, the electric light fails to satisfactorily demonstrate the condition.

I also believe that the electric currents will serve to demonstrate the presence of low grades of inflammation of the tooth pulp so often the cause of various forms of neuralgic conditions of the face and head. The faradic current especially, if applied in such cases, will demonstrate a hyper-sensitive condition of the tooth pulp. In order to locate the tooth causing the neuralgia, it will be necessary to apply the current to each individual tooth; the diseased one will give more active response to the current than will the healthy teeth; in other words, the diseased tooth will not bear so strong a current as will the healthy ones, hence the importance of using the milliampère metre for measuring the exact strength of the current.

The value of the current in the treatment of neuralgia, paralysis, atrophy of muscles, chronic indurations, tumors and various other conditions there is not time to detail; we shall therefore leave the matter here, feeling that we have offered a sufficient number of suggestions to stimulate investigation as to the value of electro-therapeutical treatment in the class of cases which have formed the especial topic of this paper.

The battery and the electrode which I use were made for me by the McIntosh Battery and Optical Company of Chicago.

No. 9 Jackson Street.

THE PREVENTION OF COLDS, AND THEIR SEQUELÆ, BY SURGICAL METHODS.

Read before the South Carolina Medical Association, June 9, 1891.

BY W. PEYRE PORCHER, M.D.,
CHARLESTON, S. C.

There is, perhaps, no class of diseases to which humanity is more subject than rhinitis, or common coryza, nor are there any to which less attention is paid, and perhaps not any of which less knowledge is had of their true character and proper treatment. It is apparent that the larynx and bronchi soon give way to frequent inroads of these attacks.

In the simplest inquiry into the functions of the nose as a breathing organ, we find that the mucous membrane covering the turbinated bones is composed of erectile tissue, styled by Bigelow, of Boston, the turbinated corpora cavernosa. It is composed of large venus sinuses, which can be suddenly filled by the capillaries which open abruptly into them, causing distention and erection.

This arrangement, in combination with the vibrissæ and ciliated epithelia, serves the two-fold purpose of acting as a guard against the entrance of cold, draughty air, particles of dust or other extraneous matter, and at the same time as a strainer for the twelve to sixteen ounces of fluid which is daily excreted to purify and moisten the air before its introduction into the larynx. This fact is well established by all authorities.

Frequent or repeated distensions or inflammatory attacks on a membrane of such an erectile character not only produce hypertrophic degeneration by adventitious connective tissue formation, but, in addi-

tion to this, and of almost inexplicable frequency, we find either a deflection or deviation of the septum from its normal position, or else an exostosis; or, more commonly still, an ecchondrosis or cartilaginous spur projecting from the surface of the septum, and in many instances penetrating into the inner turbinate, or forming a bridge entirely across the nostril.

So frequently do these growths occur, and so entirely unconscious are the individuals of their presence in the nose that, were it not for the absolute certainty of the ill effects resulting from allowing them to remain, and the great benefit derived from their removal, one would almost be inclined to act according to the motto of, "Where ignorance is bliss," etc., and leave them untouched. We immediately ask ourselves, however, what might we naturally expect from the presence of such a growth, or what would result if no surgical interference were instituted? Why, of course, a narrowing of the calibre or lumen of the nostril is caused, and the space allowed for the turgescence of the turbinated corpora cavernosa is diminished, and, being so diminished, the slightest draught or exposure serves to cause sufficient swelling to completely occlude the nostril; and a sense of stuffiness or cold in the head, with all its attendant evils, constitutional symptoms, mouth breathing, etc., is felt.

2. The normal passage of air being prevented, all the ℥xvi of fluid above alluded to is retained until it becomes inspissated and acrid, and causes submucous infiltration of the membrane covering the septum and turbinated bones. A portion trickles down the pharynx, and irritates the larynx to such an extent that violent hawking and coughing has to be resorted to in the effort to clear the throat of its presence.

This condition is thought by many authorities to constitute one of the most common forms of chronic nasal catarrh.

Under exposure to cold or sudden changes, the pressure of the contiguous surfaces will be greatly increased, forming an inflammatory center from which many reflex phenomena occur, viz., cough, asthma, headache, vertigo, sneezing, etc.

Dr. Charles R. Weed, of Utica, N. Y., speaking of hypertrophic rhinitis, says:

"Resulting from these conditions, and the most frequent of all troubles, is, first, deafness from pressure upon and occlusion of the Eustachian apertures; next, neoplasms of various kinds, polypi, ulcers, etc.; pharyngeal disease, with its various conditions; laryngeal disease, resulting from the constant irritation produced by the dropping into the throat of the retained post-nasal secretions and the hawking process to dislodge them, often resulting in a catarrhal laryngitis, and ultimately in consumption. Asthma is a very frequent sequela. Schmiegelow, of Copenhagen, in an essay published in London this year, places the cases of asthma caused by nasal diseases at about 10 per cent. in males and 6 per cent. in females, and the cases tabulated, without exception, were cured by the result of proper treatment of the nasal passages. Hack, in his work published in 1884, although exaggerating the reflex conditions arising from hypertrophies, is nevertheless entitled to the credit of being really the first rhinologist to establish that asthma resulting from the hypertrophy of the turbinated bodies is a fact. Woolen says that asthma is especially due to hypertrophy of the posterior tips of the inferior turbinated bones, and occasionally of the middle ones, which either touch the septum or curl on themselves and touch the outer wall of the nose. This same writer considers hypertrophy of the anterior tips the essential local factor of hay fever, while in our own country, such men as Roe, of Rochester, Daly, of Pittsburgh, Sajous, of Philadelphia, and Bosworth, of New York, all agree with the foreign authorities just quoted. Hay fever, with its distressing symptoms, and even aphonia, caused, in my opinion, by a nervous reflex condition in persons of a highly sensitive nature, is another of the ills following these hypertrophic conditions. Cough, in some cases, is certainly from the same source. Vertigo is often present, and even epileptiform convulsions have been reported, though rarely, as arising from these hypertrophic conditions, while supra-orbital neuralgia, diffuse headache and migraine almost invariably have their origin from nasal obstruction. I mention these diseases as being the most commonly complained of by patients suffering from hypertrophies. Of course, there are probably others more complex in character that we may be able to trace to the same origin, but, being rare, are naturally overlooked, and my time forbids a more extended research into them. I might add that Guye, of Amsterdam, Holland, finds aprosexia (inability to fix the attention) occurring mostly in young persons and especially would-be students—a condition due to nasal obstruction and hypertrophy, while Hill, of London, also tabulates a number of cases from this cause."

Many diseases of the ear through the Eustachian tube are directly attributable to and dependent on such growths in the nose and adenoid hypertrophy of the vault of the pharynx. Sir Morrel McKenzie says: "The middle ear may be considered as an accessory cavity to the nasal cavity, not only during the act of deglutition, but also during quiet respiration, and this has been proven by experiment. An obstruction in the nasal cavity interfering with the admission of air to the middle ear, will cause an inward collapse of the drum, then follows congestion, then an exudation of serum, and then otorrhœa—so frequent is the otorrhœa of young children dependent on nasal obstruction, that if one was brought to him suffering with an otorrhœa, or was a mouth breather, he would in nearly every case without any preliminary examination introduce the forceps into the naso-pharynx and bring out a piece of adenoid tissue. Nasal obstruction by adenoid vegetation, or otherwise in young children, interferes so materially with their development that if not corrected in early life, it may mean irremediable condition in after life. In fact it may be considered as axiomatic, that free breathing through the nose is absolutely essential to physiological life."

Dr. Jno. McKenzie, of Baltimore, emphasizes the statement, "that inflammatory troubles of the middle ear are frequently dependent on nasal obstruction. The irritation caused by the obstruction induces an inflammatory condition of the naso-pharynx. This continued inflammation will cause a fatty degeneration of the tensor palati muscle and the Eustachian tube will not be acted upon, thus involving the middle ear. Of course, the walls of the Eustachians are in contact, in a state of rest, like the walls of the vagina for instance, but that air is admitted into the middle ear during quiet respiration has been proved by experiment in Germany."

Nasal obstruction is also the cause of far more eye troubles than is generally supposed. Notably trachoma, pseudo erysipelas of the lids, conjunctivitis, both hyperæmic and phlyctenular, keratitis, etc. Only recently the report of a remarkable case appeared in the New York Medical Record, of "Convergent squint corrected by Adams' modified operation for deflected septum."

A brief résumé of this case is as follows: "A boy aged 12 fell from a height 10 years before and struck on the bridge of his nose. From that time the boy's eye was turned to his nose, and the nose bent in an opposite direction. The strabismus was of so exaggerated a type, that the cornea of left eye seemed almost in contact with the inner canthus of the orbit.

The voice was high-pitched and decidedly nasal in tone, giving evidence of a continual strain of the vocal muscles. He saw always double and experienced a feeling as if the affected side of his face were drawn to the opposite side. Examination showed that the left nostril was so much occluded by the deflected septum that a probe could scarcely be passed. An opening was made under a 20 per cent. solution of cocaine and the septum fractured by Adam's punch and replaced in position. The operation was painless and loss of blood not more than a teaspoonful. Goodwillie's nasal tubes were introduced and the nose packed with cotton soaked with Dobell's solution; result: the hitherto "hideously crossed eye boy was converted into a smiling boy with straight eyes and a straight nose."

The next point to which I would ask your attention is one the importance of which in my opinion should not be overlooked, namely, the dependence which exists of almost all the functions of the larynx upon what I would term "pharyngeal competency." I regard the relations of the pharynx to the larynx in almost the same light as I do the driving wheel of an engine to the engine itself, or to speak more plainly, I believe that the pharynx is the great lubricator of the larynx, which almost absolutely controls the clearness of the voice. The majority of aphonic cases are in my opinion produced by pharyngeal incompetency, and this in turn by nasal incompetency, and therefore it is a matter of continual surprise to me that the profession seem to attach so little importance to those ever-excreting organs, the pharygeal glands.

Why do they always wait for a cavity to form in the lungs before attempting to account for the origin of the mass of sputa which has been pouring out ever since the cough began? It will not be disputed that the causes of a cough are many and various, and are by no means confined to acute or chronic inflammations of the lungs, pleuræ or bronchi. Is it not then reasonable that we should not, as heretofore, wait for a cough to become loose, as the expression goes, while the larynx, bronchi, and lung tissues are becoming daily more disorganized, but rather to exert every effort to cut off the early source of the discharge, viz.: in the nose and naso-pharynx.

I now reach the most important part of this paper, viz.: How nasal obstruction and occlusion should best be relieved. On account of the great density of the tissues the lumen of the nostril can only be restored by the free use of the knife, saw, or galvano-cautery, the punch, chisel, wire snare or chemical acid, and the forcible removal of all obstructions—be they bony, cartilaginous or membranous. In my hands the nasal trephine driven by the C. & C., or challenge motor, has proved of invaluable assistance. Next to these I have used Dr. Bosworth's nasal saws and the galvano-cautery itself, or the hot wire snare. Many of the growths however are indurated in character, and having a bony substratum, their total removal becomes a matter of repeated attempts, and success is only then achieved by the aid of the most powerful and effective appliances. In conclusion, it is not necessary for me to say more than that experience has taught me that nothing but good results come from the restoration of the lumen of the nostrils to their normal calibre, as shown by cases published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Sept. 19, 1890, and the transactions of the South Carolina Medical Association, September 23, 1889; in which patients who had not only been subject to an unusual amount of coryza, but who showed all the symptoms of the ill effects of obstructed nostrils, difficult respiration, etc., from adenoid hypertrophy in the vault of the pharynx, ecchondromata, etc., passed for months and years after the removal of such growths with material if not complete relief from the recurrence of the naso-pharyngeal inflammation.

4 George St., Charleston, S. C.

NOTE.—Since writing the above I learn that to Dr. W. H. Daly, of Pittsburg, Pa., is due the credit of having first pointed out the relation of the nasal and neurotic factors in the causation of asthma in an article on that subject which he published in 1881.

BOOK REVIEWS.

TEXT-BOOK OF ANATOMY. By H. C. BOENNING, M.D., Lecturer on Anatomy and Surgery in the Philadelphia School of Anatomy. Published by F. A. Davis.

This is an excellent practical treatise on Anatomy, particularly for the student. It is a good working compend of the subject, and has sufficient illustrations to make the subject matter clear and practical. It is an excellent work for the director to have at hand during his work.

HYDATID DISEASE. IN ITS CLINICAL ASPECTS. By JAMES GRAHAM, A.M., M.D. Illustrated with 34 colored plates. Published by J. B. Lippincott, Philadelphia.

This work probably is the most complete treatise extant, upon the diseases produced by the evolution of the embryonic echinococcus. It will prove of great value to the student and pathological investigator who seek for comprehensive and accurate data upon this exceedingly interesting subject. The plates are accurate, well executed, and exquisitely colored. The author inclines to favor the method of free incision, in the treatment of accessible hydatids. He does not particularly favor electricity.

A MANUAL OF VENEREAL DISEASES. By E. M. CULVER, M.D., and J. R. HAYDON, M.D.

In this little manual, a short practical outline of the subjects within its scope is presented. The book is well illustrated and will prove very serviceable to the student, who has little time for study of the larger and more comprehensive works.

The book is published by Henry C. Lea, of Philadelphia, and it is hardly necessary to state that it is a well made and neat little volume.

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SATURDAY, JANUARY 2, 1892.

PUERPERAL POISONS.

Death in child-bed is justly regarded with special horror. And of all these deaths, those arising from septic influences are particularly unfortunate. The subject of puerperal septicæmia was recently discussed before the British Gynecological Society,[1] with the result of eliciting some very diverse views upon the subject.

PROF. OLIVER, of the University of Durham, stated that within a period of eighteen months, he had seen twenty-five cases of puerperal septicæmia in Newcastle and the immediate district. So great a number of cases had given rise to the suspicion of an epidemic influence. Once or twice he had seen three fresh cases in ten days, in the practice of different medical men, with no other cases in their hands then or since, and all in different parts of the town or neighborhood. The largest number of cases were seen in December and April. DR. OLIVER was of the opinion that puerperal septicæmia was not a specific process; but could be produced by poisons from various diseases. He apparently showed that a single case of gonorrhœa was the cause of three cases; an exanthematous fever of another, and a carbuncle of still another.

DR. OLIVER'S observations favor the view, so generally held at present, that puerperal septicæmia results from various poisons introduced from without, usually by way of the genital tract, and always in the shape of microörganisms. This is the view which has led logically to the introduction of the strictest aseptic and antiseptic procedures in the management of puerperal cases, and which has led some advanced bacteriologists to assert that the death of a woman from puerperal sepsis, where the strictest aseptic and antiseptic precautions had not been employed, was the equivalent of malpractice on the part of the attending physician.

[1] British Gynecological Journal, Vol. vii, p. 301.

If this proposition be true, it seems justifiable to conclude that a fair corollary would be, that cases treated without these specific attentions must necessarily result in a large number of cases of puerperal septicæmia, and consequently a large mortality.

On the other side of the question, DR. DOLAN, of Halifax, appeared, and apologized for taking part in a discussion on puerperal septicæmia, as his experience of the disease had been small. In a practice of twenty-five years he had had but two cases of this disease, but he had attended 3,453 confinement cases. During this time he had never shaved off the pubic hair, or washed the vulva with carbolic acid, or given carbolic injections, or treated the uterus as an important wound after delivery. Is it not fair to suppose, that if he had always used injections of corrosive sublimate, he would have had a larger number of deaths from poisoning by this agent, than he actually did have from puerperal sepsis?

The contribution to this subject by DR. HIRAM CORSON, of Pennsylvania, at the last meeting of the Association, is of the highest importance. DR. CORSON practiced medicine from 1828 to 1888, and in this time attended 3,036 confinements.

Of his earlier work in obstetrics, DR. CORSON says: "I had attended a good many cases, and had often, on my after visits, been met, on entering the room, by an odor recognized as that of putrid blood, and so offensive it was unpleasant to remain there. I spoke of it to the nurses, but they said it was always so, and as I was a mere boy, when compared with the venerable matrons who, in those days, ministered to the lying-in women, who were so neat and clean in their own persons, I concluded that the 'cloth' had perhaps remained there too long, and that its removal would do away with the fetor; so gave directions to have a fresh one applied, and went away. So things went on in most of the cases for a year or two. As a general thing the fetor was very evident for a week or more, and finally was so bad in one case, that I determined to see what condition the patient was in; when lo! I found that she had not had a single washing of the genitals and contiguous parts, or a removal of the soiled clothes since the end of the labor, though a whole week had elapsed." He was informed by the nurse that this was the usual custom, and yet puerperal fever did not occur. In cases of threatened abortion it was his custom to tampon the vagina, to remove the tampon daily and insert a fresh one, or soak the old one in vinegar, and replace it. We can readily believe him when he says that he knows of nothing more offensive than the sponges and putrid blood which he would remove from the vagina, and yet in all his sixty years of practice, he never had one of these patients develop puerperal fever, or peritonitis, or any other fatal affliction of the pelvic organs.

Such evidence as this is not negative, in the present state of our knowledge. All the conditions for sepsis, as we understand them, were present, and yet sepsis did not occur. The experience is too vast to be merely accidental. But do we really know all the conditions for sepsis? He frequently went from small pox, scarlet fever, erysipelas, and in one case even puerperal fever, to confinement cases without damage to the women. PROF. TRAIL GREEN, of Easton, Pennsylvania, who has practiced for fifty years, writes DR. CORSON: "Have been so happy as to have no case of puerperal fever, and I think it has been very rare in the practice of fellow practitioners." Another friend of thirty-five years' practice had never had a fatal case of puerperal disease. DR. WILSON, of his county, had never lost a woman in over one thousand confinements. DR. D. COLVIN, of Clyde, N. Y., never used antiseptics, and in 1,279 cases of confinement, lost but one woman, and she died immediately after the removal of the placenta. No antiseptics were used in any of the following cases:

Dr. D. Colvin	1,279 cases,	1 death.
Dr. Kemper	900 "	2 deaths.
Dr. J. T. Chenowith	1,600 "	1 "
Dr. N. T. Chenowith	708 "	2 "
Dr. A. H. Farquar	500 "	2 "
Dr. Thos. Botkin	525 "	5 "
Dr. J. S. Blair	419 "	2 "
Dr. Wm. F. Mitchell	700 "	1 "
Total	6,631	16

All of these deaths were not septic, and yet the whole mortality was less than three-tenths of one per cent.

It is generally conceded that the mortality in lying-in institutions has been materially reduced by the modern methods of aseptic midwifery. The diminished mortality is a fact. Its explanation is not necessarily correct. DR. DOLAN states that the mortality of the British Lying-in Hospital from 1779 to 1790 was only 3.2 per thousand. In 1790 CLARKE purified his wards and then attended 960 women with only three deaths. It is very evident that much more remains to be done before the complete etiology of puerperal sepsis shall be known, and a rational practice based upon this etiology established.

"A CITY OF NOBLE CHARITIES."

At the recent opening of the new addition to the New York Orthopædic Hospital "flowers and enthusiasm bloomed." Among the addresses delivered on that occasion was one by DR. T. GAILLARD THOMAS, who took for his theme the humane sentiment and generous gifts which are flowing constantly in New York in behalf of the crippled and helpless of every name and nature—a work that abundantly warrants the giving to the metropolis the title of "City of Noble Charities." The value of the gifts lately received by the Orthopædic Hospital approximates $50.000. A nucleus has been formed for the establishment of a summer branch in Astoria, on Long Island.

DIFFICULTIES ENCOUNTERED IN HEPATIC SURGERY FROM FRIABILITY OF CHOLEDOCHAL STRUCTURES. SOME RECENT ADVANCES AND IMPROVEMENTS.

The surgeon of to-day who launches his bark on the sea of gall-stone surgery must be prepared for some trying experiences. SIR SPENCER WELLS has, in his teaching as to hepatic surgery, repeatedly directed attention to the importance of delicate manipulations. He has shown from his own experience how the gall-bladder and the common duct may—especially in cases of chronic calculous occupation and recurrences—take on a condition of friability compelling a supreme carefulness of handling. Even with a great deal of care the impaired structures may be lacerated at places and times most compromising to the surgeon's best results. The walls of the gall-bladder are frequently the seat of hypertrophy while the capacity is diminished; they tear and bleed readily and refuse to hold the suture, when the contrary actions are desirable. The walls of the ductus choledochus, on the other hand, often show a thinning and dilatation where there has been an impaction of a series of calculi. These have not infrequently embarrassed the progress of an operation at the critical juncture. They have converted comparatively simple operations into dangerous and difficult ones. When both gall-bladder and ductus have been impaired through chronicity of the calculous habit, the task of suturing newly-fitted parts together is made a momentous concern both to surgeon and patient. An example of interest where difficulties of this character have been successfully, although with meager margin, overcome, has been reported by SPRENGEL.

This was a case of chronic biliary disease which was marked by an excessive dilatation of the common duct, not at first recognized by the surgeon. A first operation, for the relief of obstructive symptoms, was performed with difficulty. It consisted in an abdominal section, and in finding a gall-stone apparently lodged in the common duct; by the exertion of some force, the stone was passed into a cavity, supposed to be the duodenum, but it was really still detained in the ductus communis. The operation was concluded, but no essential improvement of symptoms was obtained. After a few weeks another operation was undertaken, the abdomen was reopened and a calculus was found in the cystic duct and was forced back into the gall-bladder; the common duct was enormously dilated. The gall-bladder with its contents was then excised, when, for the first time, a second stone was detected in the hepatic duct. An attempt was made to bring down this stone into the duodenum, but the friable common duct was torn across, and the calculus was liberated. This accident imposed upon the surgeon the duty of establishing a new channel for the discharge of the hepatic duct into the intestine. This was done by bringing the

common duct into contact with the duodenum and sewing them together, thus making a *choledocho-enterostomy*. In the face of all these complications, the patient made a good, even a rapid, recovery, and reported greatly improved and entirely well four weeks after the second operation.

REHN, of Frankfort-on-the-Main, has also recently extirpated the gall-bladder in a case of calculus obstructive disease, when there was brought to light a series of gall-stones, occupying the common duct. These were cut down upon and shelled out. The wound was closed with sutures, and recovery followed.

DR. RICHARDSON, of the Harvard school, has had some interesting choledochal surgery during the past year; two successful cases being briefly summarized in a recent issue of the *Boston Medical and Surgical Journal*. The operations were necessitated by biliary calculus. One of them was the case of a boy having a calculus of moderate size lodged in the cystic duct. The stone was readily cut down upon and extracted, but when the surgeon undertook to unite by sutures the gall-bladder and the abdominal parietes, the former "tore all to pieces in spite of the care" he could use. He was compelled to extirpate the bladder, and to form a biliary fistula, using for the latter purpose a glass tube and packing of antiseptic gauze.

A second case of the same surgeon was that of an adult male, for eight years a sufferer from gall-stone disease. In this case there were in the cystic duct eight calculi in a row, reaching to and extending into the gall-bladder; the latter was contracted in size, with its walls thickened, bleeding and friable. A third case of DR. RICHARDSON which had a fatal termination, was that of an adult female, having the history of chronic biliary obstruction, colic, jaundice, and cholæmia. In this case the operation was handicapped by a shrunken gall-bladder having thickened and fragile walls. Here also the bladder "tore all to pieces," and a free flow of bile came down into the wound through the hepatic and common ducts. This formidable train of troubles was temporarily overmastered by the glass tube and gauze of iodoform, bringing about rapidly the formation of a biliary fistula. The woman did well for several weeks, but a sponge had been overlooked and left in the abdomen at the time of the operation, so that a fatal septicæmia marred all the surgeon's efforts. With regard to the future history of the biliary fistula thus produced by the surgeon, the latter gives himself little concern, or as DR. RICHARDSON expresses it: "The fistula closes, takes care of itself."

There is another surgical procedure for the relief of biliary calculus, which has been performed a few times upon the Continent, with very good results, called *choledochotomy*. It is applicable only to those cases where the gall-stones are confined to the ductus communis. The operation consists in bringing that duct into the surgical field, in making into it a longitudinal incision, not necessarily a long one, in extracting the calculous contents and then closing the wound with sutures and antiseptic dressing. KUESTER, of Berlin, has found records of six of these operations with only one death. His own case was successful, although performed in a case manifesting some of the unfavorable alterations of structures, noted above, due to chronicity. His patient was a female of forty-eight years, having the history of gall-stone disease for two years, and of jaundice for several months. KUESTER'S diagnosis, based on all the symptoms, was that of obstruction of the common duct. The early stage of the operation verified this diagnosis. He found the gall-bladder contracted, the ductus communis very much dilated, and containing several stones. The duct was opened, the stones removed, and the wound closed with a double row of sutures and packed with iodoform gauze. A considerable amount of secondary hæmorrhage was the only accident to mar a complete recovery. The scope of this operation is, of course, narrowly circumscribed; it cannot, for instance, take the place of the *cholecystenterostomy* in cases of closure of the common duct, but BRAUN, of Königsberg, has reported a case that required both of these procedures. His case was one where the true extent of the disease was masked by adhesions. After breaking up these he sewed the contracted gall-bladder to the duodenum, when he discovered a large calculus in the common duct which was removed by incision into the duct. The wound was closed by four sutures, compressed with antiseptic gauze, after which an uncomplicated recovery took place. After seven days there was a flow of bile into the intestines.

Some of the new surgical terms given above have an awkward turn and sound, but they are expressive and descriptive and will probably stand the test of time, as many another one has already done. During the formative period of a branch of surgery having so many possible variations as hepatic operations have, a moderate new vocabulary must be accepted and even encouraged.

An interesting side light upon the subject, reported by MR. ARBUTHNOT LANE, of London, seems to show that the peritoneal cavity is, or may be under suitable circumstances, tolerant of an almost unrestricted flow of bile. The case of MR. LANE was one of rupture of the gall-bladder by external violence. Abdominal section was performed at an interval of over a month after the accident and a quantity of biliary fluid —stated at "about three gallons"—was removed. The patient, a male aged eighteen years, was seemingly moribund when he was received into the hospital, and the laparotomy was performed without much hope of success. Improvement, however, did take place. About ten days after the operation, a dull area was found over the liver and extending downwards as far the umbilicus. Aspiration removed six

pints of bile, and an incision was made later, and exploration with the finger introduced into what was apparently an adherent gall-bladder. A drain was introduced, which on ceasing to evacuate bile, was removed at the end of a week; the patient then improved rapidly and gained weight and strength. MR. LANE's case and comments thereon, were published in the *Lancet* for May 16. He thinks that if bile can be retained in the abdomen for a term of weeks without producing symptoms other than those of a serous effusion, it will give the surgeon much more courage in interfering with abnormal conditions of the gall-bladder and ducts. He holds that the escape of bile into the peritoneal cavity has been unduly dreaded from the fear of imaginary risks involved. According to PAVY no serious effects follow the escape of bile into that cavity in the case of dogs and rabbits.

E. BOUCHUT.

This eminent French pediatrician died in Paris November 26, 1891, at the age of 73 years. BOUCHUT was a voluminous writer, many of his productions being honored by special recognition. His pugnacious disposition, and the force with which he defended his ideas, prevented him from reaching the goal of his highest ambition, a membership in the Academy, and a professorship. His most extensive work was a large, systematic treatise on pediatrics, entitled "*Traité pratique des maladies des nouveau nés, des enfants à la mamelle, et de la seconde enfance.*"

He was a strong advocate of the use of the ophthalmoscope in the diagnosis of cerebral diseases; *cerebroscopie*, he termed it.

He was the originator of intubation of the larynx, and his essay, "*Du traitement du croup par le tubage du larynx,*" may be found in the *Comptes rendus de l'Academie des Sciences*, and the *Gazette des Hôpitaux* for 1858.

A NEW HOSPITAL FEATURE FOR PREVENTING THE SPREAD OF INFECTIOUS DISEASES.

The *Medical Press and Circular*, November 4, has a description of a new hospital at Berlin, called the Emperor and Empress Frederick Children's Hospital. The pavilion for diphtherial patients has a peculiar arrangement which is designed to imprison the contagium of that disease, whether brought there or generated there. This pavilion is entered by what is known as the "schleuse," or sluice. No person is allowed to pass directly into the ward from the outside world, but must pass from the porter's room into the "schleuse." There the visitor must take a bath and change his clothes; the same process must be gone through with on leaving the pavilion. The hope is that not only will these precautions prevent the conveyance of the disease to any one outside the hospital, but also to the inmates of other parts of the institution. Two new wings for non-contagious diseases have just been completed, increasing the number of beds to 200. This hospital has had a rapid progress, being under the sunshine of imperial and court favor. At the time of the death of the EMPEROR FREDERICK, the city authorities of Berlin voted the sum of 500,000 marks for the purpose of a memorial, and the disposition of the sum was handed over to his widow. She without delay determined to build with it a hospital for children, and a committee of citizens, headed by VIRCHOW, seconded the good resolve by the collection of a fund nearly as large as that given by the civic Government. It is intended soon to add two other pavilions, one for whooping-cough and another for measles. DR. A. BAGINSKY is the chief director of the hospital, while DR. GLUCK is the director of the surgical side.

SOME ANSWERS OF STUDENTS.—The *Chemist and Druggist*, quotes from the Bedford College Magazine some curious specimens of students' answers about nitrous oxide. One of these is the following: "Nitrous oxide is often called laughing-gas. With this gas they pull out teeth; this is the reason they call it laughing gas." Another is: "Nitrous oxide has a sweet taste, has a soothing influence, is an æsthete." Others there were that were quite as wide of the mark—but these will show how superficial an impression can be made on the mind of a chemistry student.

AN ARMY MEDICAL BOARD.

In response to our suggestion in a recent issue of THE JOURNAL, the Surgeon-General of the United States Army issues the following notice. We earnestly hope the Surgeon-General of the Navy and Marine-Hospital Service will also see the propriety of convening examining boards in other interior cities. This is as it should be.

AN ARMY MEDICAL BOARD

will be in session in Chicago, Ill., during February, 1892, for the examination of candidates for appointment in the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before January 15, 1892, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from whence they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character and moral habits. The candidate must be between 21 and 28 years of age, and a graduate from a regular medical college, as evidence of which, his diploma must be submitted to the Board.

Further information regarding the examinations may be

obtained by addressing the Surgeon-General U. S. Army, Washington, D. C.

C. SUTHERLAND,
Surgeon-General U. S. A.

CIRCULAR OF INFORMATION FOR MEDICAL MEN WHO MAY BE DESIROUS OF ENTERING THE U. S. ARMY MEDICAL DEPARMMENT.

The Medical Department of the Army consists of one Surgeon-General with the rank of Brigadier-General; one Assistant Surgeon-General; one Chief Medical Purveyor and four Surgeons with the rank of Colonel; two Assistant Medical Purveyors and eight Surgeons with the rank of Lieutenant-Colonel; fifty Surgeons with the rank of Major; and one hundred and twenty-five Assistant Surgeons with the rank of First Lieutenant of Cavalry for the first five years of service, and of Captain of Cavalry subsequently until their promotion by seniority to a majority.

With the rank stated in each case the pay and emoluments of the rank are associated. The salary of each grade is a fixed annual sum, payable monthly; but at the end of each period of five years of service, the annual sum representing the pay of the grade is increased by 10 per cent., until 40 per cent. is added. After twenty years of service, the 40 per cent. additional continues to be drawn, but the further increase of the pay by 10 per cent. additions ceases; *i. e.*, an officer, although he may have served twenty-five or thirty or more years, can, under existing laws, have no more than 40 per cent. added to his pay proper by way of increase for length of service. The pay of a first lieutenant of cavalry, or of a medical officer during the first five years of his service, is $1,600 per year, or $133.33 per month. At the expiration of his five years of service he becomes, by virtue of that fact, a captain, and his pay is that of a captain of cavalry, $2,000 per year, increased by 10 per cent. for his years of service, viz.: $2,200 annually, or $183.33 monthly. At the end of his tenth year of service, this rate of pay is increased by the service-addition to $2,400 annually, or $200 per month, and after five years more, the service-addition makes his pay $2,600 annually, or $216.67 per month. If he continue in the rank of captain, at the end of twenty years of service his monthly pay becomes $233.33; but about this time promotion to a majority is usually obtained, and a major's annual pay of $2,500, with 40 per cent. added, makes the monthly pay of the major and surgeon $291.67. Subsequent promotion, investing the individual with the rank of lieutenant-colonel, colonel, and brigadier-general, augments the monthly pay respectively to $333.33, $375 and $458.33. Compulsory retirement at the age of 64 years increases the rapidity of promotion to the younger men; and when retirement is effected either by age, or by the accidents of service prior to reaching the retiring age, the rate of pay subsequently drawn is 75 per cent. of the total salary and increases of the rank held by the individual at the time of his retirement. Thus, a major retired for broken health after twenty years service, draws 75 per cent. of $291.67 per month; a colonel retired for age, 75 per cent. of $375. The medical officer has the right of selecting quarters in accordance with his rank, and when stationed in a city where there are no Government quarters, commutation money, intended to cover the expense of house rent, is paid to him. The Government provides forage and stable room for the horses of the medical officer, and when traveling under orders, the expenses of transportation are paid by the Quartermaster's Department.

Among the privileges granted to medical, as to other officers of the Army, is that of leave of absence on full pay. The authorized leave amounts to thirty days annually. This leave is not forfeited if not taken during the year, but is credited to the officer, who may thus accumulate a continuous leave of four months on full pay. If he desires to be absent for a longer period than four months, and the permission is accorded him, he is reduced to half-pay for all time in excess of the four months, or maximum of cumulated leaves of absence. Absence from duty on account of sickness does not affect the relations of the officer with the paymaster; he continues to draw full pay.

A commission in the Medical Department of the Army is an instrument which is good for life, premising conduct consistent with its retention on the part of its possessor; but it involves no contract which binds the individual to service for any given number of years. On the contrary, should the medical officer find, on experience, that civil life has greater attractions for him than that of the Army, there is nothing to prevent him from at any time tendering the resignation of his commission.

A young medical officer, on appointment, is usually assigned to duty for a few months at some large post where there are other officers of his department, to afford him opportunity of becoming acquainted with the requirements of the Army Regulations and the routine duties of military life. After this he goes to some post west of the Mississippi River, where he serves a tour of duty of four years. An assignment in the East follows the leave of absence which is usually taken at this time; and in after years his stations are selected so as to give him a fair share of service at what may be called desirable posts, as an offset to the time spent at less desirable stations.

Candidates for appointment to the Medical Corps should apply to the Secretary of War for an invitation to appear before the Army Medical Board of Examiners. The application should be in the handwriting of the applicant, should give the date and place of his birth, and the place and State of which he is a permanent resident; it should be accompanied by certificates based on personal acquaintance from at least two persons of repute as to citizenship, character and moral habits. Candidates must be between 21 and 28 years of age (without any exceptions), and graduates of a regular medical college, evidence of which, the diploma, must be submitted to the Board. The morals, habits, physical and mental qualifications and general aptitude for the service of each candidate, will be subjects for careful investigation by the Board, and a favorable report will not be made in any case in which there is a reasonable doubt.

The following is the general plan of the examination:

I. The physical examination will be rigid; and each candidate will, in addition, be required to certify "that he labors under no mental or physical infirmity, nor disability of any kind, which can in any way interfere with the most efficient discharge of any duty which may be required."

II. Oral and written examinations on subjects of preliminary education, general literature and general science. The Board will satisfy itself by examination that each candidate possesses a thorough knowledge of the branches taught in the common schools, especially of English grammar, arithmetic, and the history and geography of the United States. Any candidate found deficient in these branches will not be examined further. The examination on general science will include chemistry and natural philosophy, and that on literature will embrace English literature, Latin, and history, ancient and modern. Candidates claiming proficiency in other branches of knowledge, such as the higher mathematics, ancient and modern languages, etc., will be examined therein, and receive due credit for their special qualifications.

III. Oral and written examinations on anatomy, physiology, surgery, practice of medicine, general pathology, obstetrics and diseases of women and children, medical jurisprudence and toxicology, materia medica, therapeutics, pharmacy, and practical sanitation.

IV. Clinical examinations, medical and surgical, at a hospital, and the performance of surgical operations on the cadaver.

Due credit will be given for hospital training, and practical experience in surgery, practice of medicine, and obstetrics.

The Board is authorized to deviate from this general plan whenever necessary, in such manner as it may deem best to secure the interests of the service.

The Board reports the merits of the candidates in the several branches of the examination, and their relative merit in the whole, according to which the approved candidates receive appointments to existing vacancies, or to vacancies which may occur within two years thereafter. *At the present time there are twelve vacancies to be filled.*

An applicant failing in one examination may be allowed a second after one year, but not a third.

No allowance is made for the expenses of persons undergoing examination, but those who are approved and receive appointments are entitled to transportation in obeying their first order assigning them to duty.

Copies of examination papers used by the Board in session in New York City are hereto appended as an illustration of the character of the questions submitted to candidates.

CHARLES SUTHERLAND,
Approved: *Surgeon-General.*

REDFIELD PROCTOR, *Secretary of War.*

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D. C., March 4, 1891.

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

First Annual Meeting of the American Electro-therapeutic Association, held in Philadelphia, September 24, 25 and 26, 1891.

(*Continued from page 971*).

William F. Hutchinson, M.D., read a paper on

WHAT A GENERAL PRACTITIONER CAN DO WITH ELECTRICITY.

After alluding to the pleasure that it gave him to write a paper for an Association composed of men in sympathy with his subject, Dr. Hutchinson began by saying that "American doctors in medicine are among the shrewdest of citizens. They know that the age demands increased capacity for production from them as from all others; and as their merchandise is public and private health, most preciously desired of all products, the people look to them to neglect no means to provide it as perfectly as may be. They know that foremost among these means, the scientific use of electric energy has taken place, and that its better use is one of the things to be learned."

He expressed his opinion of instruments needed by general practitioners as follows:

Much handling of them has taught me to avoid all prettily finished boxes whose contents are sealed, upon which repairs can only be made by the maker. My advice is to buy no form of galvanic cell unless every part is easily inspected, readily understood and quickly repairable without expert aid. So far, I believe that some form of Grenet cell is the best that a general practitioner can find for portable use. For office work, where great life is required and small trouble, I have not found anything to equal the new Edison cell, marked "Type C" in his catalogue. It will give exactly the some voltage, about seven-tenths volt per cell, during its entire life, about a year of ordinary service.

For faradic machines, I recommend a DuBois Reymond coil with two Grenet cells in the box. One of these will be sufficient for ordinary use, but in asphyxia from gas inhalation, in drowning cases and especially in opium narcosis, where it may be necessary to prolong the treatment for hours, a second cell is called for. Perhaps the best faradic machines in America are made by Fleming, of Philadelphia.

Among the diseases which Dr. Hutchinson thinks may be successfully treated by the general practitioner are all functional derangements of special sense and such forms of their paralysis as are dependent upon excentric causes, certain forms of dyspepsia dependent upon atony of stomach nerves, sexual neurasthenia and impotence springing therefrom, peripheral neuralgias and such others as are confined to long nerve trunks, herpes zoster, muscular rheumatism, neuralgic dysmenorrhea, and parametritis. In each of these he gave his method of procedure and the form of instrument best to employ, with many valuable hints.

He then presented an instrument made after his suggestion by Sample, of Chicago, which included, in small space and at a moderate cost, a milliamèter and voltmeter. This he uses to measure accurately resistances, and stated that he is at present engaged in a study of electro-diagnosis of disease by means of carefully measuring resistances in health and deviations therefrom, until a large enough number has been accumulated to formulate a system. In this work, he asked the coöperation of the Association. In conclusion he said: In this desultory way, gentlemen, I have endeavored to suggest some of the many things which a general practitioner may do and do well, with his two instruments and half a dozen electrodes. The list is but a small part of the whole, but it need not be extended here. I have said nothing of electro-surgery or gynecology, because I believe that success in both is dependent upon a degree of expertness in manipulation and an amount of knowledge of electro-physics that he will not be willing to give sufficient time to attain.

What he may not do, his own good sense and a fair amount of experience will soon teach him; and the remaining knowledge will be sufficient to imbue him with respect for the science of electro-therapeutics and for the men who devote themselves to its advancement, often in face of factious and determined opposition.

M. J. Grier, M. D., of Philadelphia, read a paper on

THE TREATMENT OF SOME FORMS OF SEXUAL DEBILITY BY ELECTRICITY.

Of the incidental inquiries presented to the physician, many of them will refer to the derangements of the sexual functions. They usually seek relief from a neuralgia, pain in the back, muscular debility, or some other cause leading easily and naturally from the ostensible to the real object of the visit; this is generally the case with the younger subjects who have become conscious of an appreciable physical failure, or who, from the presence of some slight subjective symptoms, are apprehensive that such failure will certainly occur. Another class will seek relief from conditions fully developed and at once are freely communicative. Both classes have morbid ideas as well as erroneous opinions concerning their condition and add difficulty to their management; some of them have already been under treatment; the family physician has been consulted, and iron, strychnia and electricity have been continuously administered, but without the desired result.

My purpose is to consider some of the conditions most usually presented, and what may be done for them by electricity.

The larger number of such cases present a state of local and general debility resulting from excessive and long continued stimulation of special nerve endings, with consequent exhaustion of the spinal and cerebral centres controlling the parts involved.

The neurasthenic condition of the patient will probably and justly demand our earliest attention. Whether it be the cause or the effect of the sexual debility, the progress and results of the local treatments will be much more decided as this state disappears. In one class, and I think a large one, it will be found to be a lowered functional activity of the entire nervous system, depending on preceding mental depression caused by the gradually developing consciousness of the diminution of the virile power and the fear of its complete abolition. In another class, of more mature years, we will find varying degrees of inability, ranging from actual impairment of function to complete loss of power.

In addition to the value of properly directed medication, aided materially by the change in the morale of the patient, as we succeed in inspiring him with the hope of relief by demonstrating to him its possibility through the results of treatment, we shall find electricity a potent factor in his restoration. Without attempting, in this phase of neurasthenia, to differentiate the form as to its special character beyond the recognition of the sexual disturbances, we may proceed to its relief at once by the employment of galvanism in the treatment of the head and spine. Central galvanization with its catalytic and alterative effects will, perhaps, best meet the indications; the method may be varied to suit each particular case; but, as a rule, the effort will be to bring the central and spinal centres under its special influence by either increasing or diminishing their irritability. In the application to the head the vertex is well moistened and a two-inch electrode placed on it and firmly maintained. The vertex is selected because the current is well borne at that point, there is less vertigo or other apparent cerebral disturbance. To diminish cerebral irritability I use the

positive pole on the head, as I am convinced from observation the effect is more sedative. The negative electrode is a slightly convex button, two inches in diameter. For plate electrodes I prefer pure tin plates about No. 28 guage, as they are soft and are easily moulded to any curved surface and are always bright and fresh looking; these are covered with ordinary white undressed muslin, such as cotton shirting. I have used such a covering for over twenty years and prefer it. Perhaps equally important is the greater uniformity in the relation of the electrode to the skin, as to distance; it never varies 1-100 of an inch, keeping the current density quite regular; while with the sponge the ever varying distance and pressure may be quite enough to convert an intended stabile to a labile application. Having adjusted the positive plate to the vertex, the negative is placed subaurally on either side; beginning with a minimum amount of current, say about two milliampères, and a uniform pressure, the negative electrode is slowly moved down over the region of the cervical sympathetic nerves, until we reach the first dorsal vertebra, where we may gradually raise the current strength to five milliampères and pass slowly down each side of the upper spine. This current strength should be maintained, as the increased resistance of more tissue is brought into the circuit. As a rule we need not pass below the dorsal vertebra, depending on the cathelectrotonic state induced below that point, and reserving the special lumbar and sacral centres for subsequent treatment. Carefully avoiding any abrupt change of application and pressure, the positive may now be placed over the inferior cervical ganglion on either side and the negative traced over the course of each dorsal nerve, thus influencing gently the sympathetic ganglia. What this influence is, or how it acts beyond the so-called catalytic change, we do not know. The effect of an interrupted galvanic current on the nerves and muscles has been fully established, as laid down by the laws of Pfleuger, giving us normal actions of contraction on opening and closing the circuit. It is probable in a labile application of the current, as above, the movement of the cathode over the tissues is equivalent to an opening and closing of the current, as each cell is successively subjected to its presence, and thus there is induced a momentary contraction or tonic state of the vascular muscles, resulting in the improvement of circulation and nutrition.

Perhaps, also, the electrical actions upon trophic nerve tissues may produce changes in the disassimilation of other tissues and organs of the body, organic metamorphoses, modifications of nutrition, which constitute a part of the "catalytic effects."

The general result of the treatment after a number of applications is apparent in the disappearance of the sallowness, nervous depression, and a better cutaneous circulation as shown by the improvement in the complexion; a more refreshing sleep and less disposition to lag on rising; there is also an improvement in the digestive functions, and a general feeling of bouyancy. This gives us a much better foundation on which to build our efforts in the treatment of the local disturbances.

The loss of the erectile power is the most prominent of the local symptoms, and is that which naturally impresses the patient most forcibly, and impels him more than any other to seek professional aid; to him it is but a single fact; to his physician it is the evidence of the derangement of a complicated system of parts and functions, both local and general.

We will study the morbid conditions which will be found to arise mainly from the irritation or sedation of centres caused by overstimulation, and will consider more in detail the physiology of the mechanism of erection. The active dilation of the cavities of the corporal is effected through the influence of the nervi erigentes.

In speaking of the probable existence of the vaso-dilator nerve Landois says, "If the nervi erigentes be divided, there is no effect on the blood vessels of the penis; but if their peripheral ends be stimulated with electricity, the sinuses of the corporal cavernosa dilate, become filled with blood and erection takes place."

These reflexes may be excited by physical excitation of the sensory cutaneous filaments, by volitional contraction of the genital muscles, by the physical activity of the cerebrum. If the activity of these centres be thus induced, the first result is that of excessive dilation of the arteries, and engorgement of the cavities of the corpora and the first stage of erection is produced. To maintain it, the outflow of blood must be retarded by the constricting action of the appropriate muscles. Failure of these centres to respond, means absence of dilatation and its attendant engorgement, and the resulting inactivity of the retarding muscles, producing a not infrequent form of nervous impotence clearly referable, directly, to the functional inactivity of the nervi erigentes.

These cases I have found associated with long-continued continence, and in men of excessive mental application in whom the outgo of cerebral activity has been expended in other directions; also in those who have become sexually morbid, having lost through exhaustion the normal physical reflexes; usually they retain more or less of the physical reflexes and respond to stimulation of the local sensory nerves, thus proving that the spinal paths of the efferent nerves have not been impaired, or at least not to a very great extent.

In such cases the indications are to stimulate the nervi erigentes and the upper centres acting in conjunction with them. An ascending current of about five milliampères of galvanism may be passed from the perineum, from over the third and fourth sacral nerves, where the vaso-dilator branches arise, and from the genito-spinal centre of Budge, at the fourth lumbar vertebra, successively; the negative electrode should be carefully applied to the back and sides of the neck and to the vertex, endeavoring to increase the excitability of the cortex in those in whom it has depressed, and to quicken the responses of the lower spinal centres to their impress.

We have another important set of nerves to consider in the vaso-motors. Their function is to maintain a normal tone or contraction of the blood vessels and antagonises the action of the vaso-dilators.

Their general centre lies in the medulla oblongata; stimulation of this centre contracts the arteries and its paralysis causes relaxation and dilatation of them. In the efferent nerves there are fibres whose stimulation affect this centre; some exciting and others depressing it. The primary stimulation of these nerves is attended by contraction of vessels and over-stimulation by dilatation of them; there are also local centres in the spinal cord, each controlling certain areas. Under ordinary conditions the vaso-motor nerves are in a state of moderate chronic excitement. If from irritation of these centres we have the vaso-motors over-excited and a controlling influence exercised on the vessels supplying the erectile tissues, through their dominant control over the vaso-dilators, the engorgement of the sinuses of the cavernous bodies will be prevented and erection will be impossible. This happens in the earlier changes following excessive sexual stimulation, and is most probably the result of the irritation, which precedes exhaustion of the centres. The excessive tone is shown in the diminished blood supply to, and the lowered temperature of, the pale and shrunken organ. In chronic hyper-action of these nerves, the lessened blood supply to the secretory organs is shown by the diminished amount of their secretions, and the consequent loss of

this source of stimulation. In such cases, galvanism as described in the application to the vertex and upper spine for neurasthenia, will diminish the upper central irritability and good results will come from a stabile application to the lumbar region with a current of five or six milliampères through a positive four by four inch plate, one of equal size being placed at some indifferent point on the lower portion of the thigh. The extra current acts remarkably in many cases, and probably in the same manner as the continuous, temporarily lowering the activity of the constricting nerves. I find the best results are produced by placing a moistened electrode about $1\frac{1}{4}$ inches square against the perineum; this should be the positive pole; the negative may be a plate of three inches, held continuously against the sacro-lumbar junction; the cords should be connected with the terminals of the primary coil. Commence with the minimum strength and gradually increase it to as much as the patient can comfortably bear. The application will require from ten to fifteen minutes duration; in some cases, usually those who are less nervous and irritable, the effects are noticed at the time of the application; others may not notice a change for half an hour or longer, after the treatment. In those in whom the sensory nerves are not very much impaired the first impression may be a sense of tingling along the dorsal nerve of the penis; or it may be distributed over the inner surfaces of the thighs, through branches of the internal cutaneous nerves, often reaching to the knees. In a little time a warm glowing sensation will be felt mostly in the sacro-lumbar and gluteal regions; this being obtained, the application should cease. This effect may last from a few minutes to several hours, and will be alluded to by the patient at a subsequent visit as causing a feeling of comfort and pleasure. The ultimate result is a restoration of the normal circulation and an improvement in the nutrition of the parts with increased local muscular power.

The opposite condition of vaso-motor relaxation is frequently met with; it is an exhaustion following the state of irritability just described. When affecting the centres controlling the genital organs, the result will be a passive engorgement with a flaccid elongation; the temperature may be normal or lowered, depending on the sluggishness of circulation; the muscles are under-nourished and voluntary control of them is lessened; in many cases the secretion of the coronal glands is unpleasantly augmented. In the erectile effort, the vaso-dilators may be sufficiently active to enlarge the cavernous sinuses and increase the flow of blood thereto, but the weakened muscles fail to sufficiently retard the return of blood from them, and the result is a moderate increase of bulk, with a soft glans and an easily compressible body. As we cannot influence the nerves by direct contact, we will have to depend upon the application of galvanism to those parts which anatomy and experience teach us is the most available, and through which we can get reflex effects. A very efficient method will be the introduction within the urethra of an uninsulated metallic sound connected with the negative pole; the current of galvanism should not be over two or three milliampères, and should be slowly broken, say about twice each second, for not over two minutes; the contact should last only during the instant of making, giving a short interval of excitation and a longer one of rest. The improvement of repeated applications will be shown by the retraction of the organ to a normal size. The immediate effect of the application is due both to muscular stimulation and increased arterial contraction; but mostly to the latter. Two other methods may be employed to produce this stimulation. Galvanism applied to the surface of the inner side of the upper third of each thigh, with a bare negative electrode, kept slowly moving, and using a current strength only sufficient to develop a pungent irritation of the sensory nerves; to use more would be to overtax and exhaust the vaso-motor nerves still further. The bare negative electrode of the inductive coil may also be used over the same region and for the same purpose. The vibrations should be slow enough to give perceptibly distinct shocks. The positive pole in therapeutic applications may be placed at any indifferent part, since the effect desired is the reflex action produced by the irritation of the negative pole.

Dilatation and turgescence of the sinus of the corporæ having occurred, we can readily see how a partial or complete failure of these muscles to act will impair or prevent erection. In their sexual activity, these muscles, while partly under volitional control, are mainly excited by reflexes; and very readily, in health, become equally active under the reflexes resulting from stimulation of the sensory nerves of the penis and adjacent parts. These muscles respond more or less to the faradic and galvanic currents according to their degree of health or exhaustion, and tests thus made may assist us in the diagnosis of their condition. A suitable electrode, insulated when it comes in contact with the anal margin may be introduced in the rectum and pressed against the anterior wall; a small flat electrode, connected with the negative pole of the extra current should be placed against the perineum, and the current gradually increased in strength until muscular action is produced, which in health is quite strong. If the muscles fail, or respond feebly, the galvanic current may be substituted, observing the same polarity, making slow interruptions, with a feeble current gradually increasing both the strength and rapidity of interruption. This proceeding answers very well for the direct treatment of these muscles. Decided contractions of the accelerator and compressor urethral muscles may be obtained by substituting, for the perineal electrode, an uninsulated metalic urethral sound, using an uninterrupted galvanic current.

These muscles being supplied by the muscular branches of the pudic nerve, indirect stimulation of them may be made by placing a positive plate electrode over the sacrum, the rectal electrode becoming the negative and remaining as before; using, if the muscles are very feeble, a short constant current of not over two milliampéres, supplemented by twenty or thirty interruptions, occupying about one minute. A weak muscle of this class requires a long duration of current action and short intervals of rest, if the current be of not more than the above strength; vigorous treatment only seems to exhaust the already enfeebled parts. The rectal electrode may now be changed for a small perineal plate, and stimulation of the perineum and root of the penis may be made with a bearable strength of the extra current, slowly interrupted. This will produce both muscular and reflex effects.

Conjoined with defective muscular action, there is usually a lowered sensibility of the genital cutaneous and special sensory nerves, caused by the exhaustion following excessive stimulation. This will be found most marked about the prepuce and the glans, more particularly around the corona and the papillæ beneath the meatus; also, if the anæsthesia be profound, in the frænum præputiatis. The cremaster reflex is sometimes diminished and may be abolished. Such cases may have a decided cerebral sexual activity with physical failure; or there may be a moderate erectile power, with loss of sexual pleasure and a retarded or incomplete organism. Sensibility of the surfaces may be quite decided under electric tests, and the tactile sensibility much enfeebled or lost, lessening the value of electro-diagnosis, excepting as to the condition of the muscles. As the local nutrition is usually impaired, resulting in relaxation of tissue and lowered temperature, we will meet both indications by the use of the galvanic current applied to the sensory parts

most affected, by means of a small bare electrode, placing a medium positive plate over the sacrum to include the origin of the pudic nerve, from which is given off the dorsal nerve of the penis. My experience is that in treating the lowered sensibility of such nerves, the best results are obtained from a very mild current in this manner, and continued only long enough to produce the blush and a slight pungent sensation at the negative pole.

In the earlier changes of nerve excitability one often finds an extremely sensitive condition; a hyperæsthesia, in which even contact of the ordinary clothing with the surfaces will suffice to produce erotic excitement; præputeal and rectal irritation, as well as other local causes, may originate it, and in many cases leads to direct stimulation of the genitals by touch, which continued to excess is a potent factor in producing abnormal excitability and consequent exhaustion of these nerve centres. It is also a frequent cause of premature emission. Having removed or corrected the exciting local causes, galvanism will aid us in removing the central irritability. We may use the sedative action of the anode applied over the sacrum, using a stabile current of not over five milliampéres: the negative should be placed over some indifferent point, preferably to the lower limbs. It is essential to have a very mild current, free from any variation of strength and to maintain the sacral pole evenly at one position and for a longer time than has been advised in other applications. Having thus treated the centres, we may diminish the excitability of the nerve terminals by enveloping the penis with a soft metallic plate, thinly lined with moist absorbent cotton to fill up irregularities and make more uniform contact. This plate should be the anode and the cathode may rest on the abdomen. A mild, steady current through a sensory nerve for ten or fifteen minutes, traversing it in the normal nerve current direction, will lower the excitability of the nerve. Urethral irritability is a most frequent cause of morbid action of the genital centres, and gives rise to various degrees of nerve irritation or sedation. Premature and painful emission may also be traced to congestion and irritation of the veramortanum. Similar impaired functional activities may result from the reflexes induced by continued irritability of the urethral lining and its ducts. An anodic bare metalic sound, with a current of not more than one milliampère and a cathodic plate over the lumbar vertebræ, will diminish the excessive irritability of this membrane. Many other points might be considered, but the general method of treatment and the reasons therefore are here outlined, and I trust may be of service to others as I have found them.

(*To be continued.*)

Mitchell District Medical Society.

Forty-first Semi-Annual Meeting, held at Columbus, Ind., December 17 and 18, 1891.

FIRST DAY—MORNING SESSION.

The Society met in the M. E. Church, and was called to order at 10:30 A.M. by the President, Dr. E. S. Elder, of Indianapolis, Ind.

Dr. Geo. W. Burton, Secretary, of Mitchell, Ind., read the minutes of the last meeting, which were approved.

Dr. Geo. T. McCoy, of Columbus, Chairman of the Committee of Arrangements, then made a report, in which he said that a banquet had been tendered the Society by the Bartholomew County Medical Society, and a carriage ride on the last day by the citizens of Columbus.

Dr. J. W. Marsee, of Indianapolis, read a paper entitled:

THE DIFFERENTIAL DIAGNOSIS OF INTRA- AND SO-CALLED EXTRA-CAPSULAR FRACTURES OF THE NECK OF THE FEMUR.

He said he left college with his ideas in hopeless confusion as to the pathology and hopeless disagreement between teacher and teacher, and between teacher and text-book, except that some fractures were within the capsule, and some without, and that in the latter cases bony union resulted, in the former not. There did not stand out clearly in his mind one single fact or symptom upon which he could base even an approximately accurate differentiation between these two kinds of injury. Under these circumstances, he was forced to analyze the symptoms which were poured into him by his teachers, as draught mixed with grain in a hopper, and to ascertain as well as he could their relative value. He proposed to present these matters to-day, trusting that the symptoms on which he had relied for the last fifteen years might prove valuable to the Society. Concerning this differentiation several questions arise, as, 1, Is it worth while to make it at all. Hamilton, Bigelow and others say not, alleging, *a*, that the treatment is much the same in every fracture of the neck; and that, *b*, it is unusual to see a case in which a positive diagnosis, favorable or otherwise, can safely be made. With all deference to these distinguished gentlemen, he would beg leave to differ as to both propositions. 1. Because there is scarcely a single practitioner today who would not make a distinction between the treatment of a fracture clearly intra-capsular and one as clearly extra-capsular. The habit of treating all cases alike had for its corner-stone a doubtful diagnosis.

As to the second proposition, he believed that a positive differentiation, and consequently a positive diagnosis, can be made in nineteen cases out of twenty. But aside from the treatment, we have a strong inducement to leave untried no chance of accurately locating the seat of injury.

When a patient employs a surgeon, he has a right to expect not only the utmost exercise of that surgeon's skill in diagnosis and treatment, but as well to receive such consolation and relief for mental suffering, as may come from the confident hope of a favorable termination of his case; on the other hand, such warning is but the future disposition of his affairs as may come from a less favorable prognosis. Fractures of the neck of the femur, in the lay mind as well as in the professional, are divided into two great classes; the one leaving as a net result, even though it be after weeks of suffering, a limb shortened, deformed, with lessened motion, but still serviceable, even strong enough to help earn a living for its owner and his family; the other leaving a state of affairs little short of practical helplessness.

Admitting then, for the sake of argument, that at the moment of occurrence extra-capsular and mixed fractures are impacted, and all intra-capsular are not, we come to the question, How can this differentiation be made? By settling the question of impaction first of all, for upon the maintenance of this condition depends our security of future best results. All violent manipulation, extreme flexion, hyper-extension or rotation, or standing the patient on his feet, are to be avoided. Sabatur long since called attention to the fact that the certainly and rapidly fatal cases were those which had been roughly handled.

To one watching the common diagnostic methods in these cases, advocated by high authority, he ceases to wonder that surgeons are skeptical about impaction, as it is often broken up under their manipulations before they think of looking for it. As a matter of fact, preternatural mobility and crepitation, invaluable sometimes under ordinary circumstances, should be kept in the background here, since a search for them is prejudicial and often fatal to impaction, and they are most easily found in cases clear enough without them. To make this diagnosis, it is not necessary even to lift the limb from the bed, to make any great amount of extension, or more than slightly and quietly to rotate the limb.

The behavior and appearance of the great trochanter is the keynote of the situation.

Should there be no impaction present in fracture at the base of the neck, the author would consider a positive diagnosis almost impossible, but should try to base it on age, direction of force, rotation of femur on its own axis, and signs of injury to great trochanter.

A word with reference to the medico-legal aspect of such cases. Suits against surgeons for failing to secure bony union in intra-capsular fractures, or on account of the deformed, shortened and partially crippled limbs resulting from the impacted variety, are not uncommon. He is convinced that by a little foresight on the part of the surgeon, these suits could be avoided. He recommended a careful differentiation of the varieties with a view to accurate prognosis. On the basis of this clear diagnosis, let a prognosis equally clear be made in plain language, and in the presence of reliable witnesses. He has for years explained to both patient and friends the exact location of the fracture, and the absolute necessity of the result, whatever that may be. He advises also, that the surgeon claim no special credit for good results in such cases. Honesty between surgeon and patient was a factor of vital importance from a medico-legal standpoint.

AFTERNOON SESSION.

Dr. P. Richard Taylor, of Louisville, Ky., read a paper on

INTUBATION IN DIPHTHERIA.

He reported four cases of intubation, selected from a number during the recent endemic of diphtheria in Louisville, two of which were fatal, and two successful.

Case 1.—October 29, he was called to intubate the larynx of Robert W., aged 7 years and 5 months. On examination, he found diphtheritic patches on the tonsils and in the pharynx. In the larynx the mucous membrane was swollen and tumefied, but there was no false membrane. Temperature was 102.5°; pulse 150, and thready. The dyspnœa was distressing. A tube the size required for an 8 year old child, was introduced into the trachea, which relieved the dyspnœa immediately. At the end of an hour, respiration was 22, pulse 140. A spray of peroxide of hydrogen was used every hour. The tube was removed on the seventh day, the child making an uninterrupted recovery.

Case 2.—R. H., æt. 2 years and 8 months. On examination, he found diphtheritic membrane in the nares and pharynx, on the tonsils and tongue, and in the larynx. The child had been sick but forty-eight hours; the temperature was 102°, pulse 150, the dyspnœa excessive and progressing. A tube the size required for a child 3 years old was introduced into the larynx, relieving the dyspnœa immediately, and in ten minutes the child was asleep. On the morning of the third day, the temperature was 101°, pulse 140, face flushed, membrane yellow and breaking down. A spray of peroxide of hydrogen was ordered to be used every hour. Child died on the afternoon of the fifth day, from septic poisoning.

Cases 3 and 4 were similar to those reported. The author said that intubation, in diphtheria, is indicated as soon as dyspnœa becomes progressive, and is due to laryngeal obstruction resulting either from false membrane, or tumefying of the mucous membrane and surrounding tissues, under which conditions the introduction of the tube gives immediate relief.

The size of the tube is governed by the child's age, according to O'Dwyer's system of measurement, except in such cases where the tube has been dislodged by coughing, when he invariably substitutes the next size larger, and this latter, his experience had taught him, is absolutely essential.

The nourishment must be liquid, or else in the form of ices, and must be administered by the spoonful, the patient either sitting in the upright position, or lying on the side, and taking the entire contents of the spoon at one swallow, to prevent the passage of the liquid into the tube.

The removal of the tube between the fifth and the ninth day, ordinarily, is safe, but in some cases he has left it in position as long as twelve days. Its removal leaves the vocal cords stretched wide apart, the epiglottis standing almost straight, and stiffened from being held for several days in one position, and also leaves it unable to perform its normal function, rendering it necessary for one or two days longer to give liquid food by a spoon.

In two cases cited death resulted from septic poisoning and heart-clot, and frequently, exhaustion is the fatal cause. The specialist renders breathing possible, yet he with all his apparatus, and the general practitioner with all his medicine, can give but a grave prognosis in diphtheria.

Dr. Geo. W. Burton, of Mitchell, Ind., asked if Dr. Taylor used the peroxide of hydrogen in full strength, to which Dr. Taylor replied that he did; that he used it with the idea of dissolving devitalized tissue or membrane, not expecting to get any systemic effect from it.

Dr. Geo. T. McCoy, of Columbus, asked Dr. Taylor to explain the technique of intubation, which he did, his method being about the same as that recommended by O'Dwyer and others.

Dr. Lewis C. Cline, of Indianapolis, considered the subject under consideration an exceedingly interesting one, not only to the specialist, but to the general practitioner. He thought the trouble with general practitioners, in performing the operation of intubation, was due to a lack of confidence in themselves; at least, this had been his observation. When he took a special course under O'Dwyer in New York, he said, O'Dwyer gave a public exhibition of his method on a dead baby to the doctors attending the Post-Graduate School, and of the fifty-five physicians who saw the operation, only three succeeded in introducing the tube into the larynx in one hour's time. The operation had to be studied thoroughly before it could be done dextrously. It was simply mechanical. Every physician should learn to do the operation. If the diphtheritic trouble extends down into the trachea very far below the larynx, he thought that neither intubation nor tracheotomy was of any consequence, and simply added suffering to the patient to do it. Where, however, it is located entirely in the upper part of the larynx, so that the tube will pass through, relief is immediate. He had intubated in three cases, the first one being a success. In two other cases the introduction of the tube did no good, because the diphtheritic membrane had extended down the trachea and the tube would not pass the obstruction.

Dr. A. B. Richardson, of Cincinnati, said he had been interested in this subject of late simply from the reading of papers in regard to it. At the last meeting of the Ohio State Medical Society, Dr. Goodhue, of Dayton, read a paper giving statistics of twenty-seven cases in which he operated, with a mortality rate of 40 or 45 per cent. Since then, in a paper read before the Cincinnati Medical Society, Dr. Goode had given statistics of twenty-seven cases also (by coincidence), with about the same rate of mortality.

Dr. Richardson thought there was very little variation on the part of operators in the technique of the operation; but the rate of mortality was interesting, and the question comes up as to whether it is an improvement over tracheotomy. He believed the general opinion of operators was that intubation was less formidable, in its aspects at least, and consequently more acceptable to the friends of patients, and more easily done. It does not require anæsthesia, and offers as good, if not better, prospects for recovery, consequently is to be preferred to tracheotomy in most cases.

Dr. Taylor said the mortality in intubation was between 40 and 60 per cent. A doctor's percentage fluctuated according to the virulence of an epidemic. The operation of tracheotomy was about abandoned for cases of diphtheria;

but for foreign bodies in the trachea, it was a good operation, and as a rule successful. For the removal of diphtheritic membrane it was a failure.

Dr. McCoy would like to know *when* and *when not* to operate. He had had several cases of diphtheria from time to time which had terminated fatally.

Dr. Taylor related instances of physicians in Louisville for whom he had recently intubated. One physician had up to the present time fifty-five cases, with five deaths. In the five fatal cases the trouble was laryngeal. The majority of cases that became laryngeal were necessarily fatal whether the tube was introduced or not.

As to diagnosis, or *when* and *when not* to operate, that depends upon the physical examination, of finding where the obstruction is, of telling whether the membrane has extended down the larynx or not. This could be determined by using the laryngeal mirror, etc.

Dr. William Freeman, of North Madison, Indiana, had met with a large number of cases of diphtheria during twenty-six years of practice, but could hardly believe that 30 per cent. of the cases were due to laryngeal stenosis. He did not believe that one-half of the cases he had seen, in which the larynx was involved, were fatal.

Dr. E. S. Elder, of Indianapolis, said that intubation of the larynx was an exceedingly valuable method of treatment, and comes in as a life-saving remedy when other measures failed. One of the most frequent causes of death in diphtheria was heart failure. We know that if dyspnœa continues for a long time, it tends to weaken the heart rapidly, and it is a potent factor in the causation of heart failure. If we could maintain a vigorous circulation, he thought the obstruction would pass off after a while. Most operators restricted intubation to laryngeal obstruction alone; but since the introduction of the operation a great many physicians had "gone wild" over it, and had made exaggerated claims for it, resorting to it in cases that were hopeless from the first, hence he thought more or less *odium* had been attached to the operation. Tracheotomy, in his opinion, was a desperate operation, and only occasionally did cases get well from its performance. There should be no comparison between it and intubation. Intubation saved the physician a good deal of mortification; it was not a bloody operation and the patients could stand it. In a word, it was imperatively demanded in all cases of laryngeal obstruction. All practitioners owed it to their patients to learn to do the operation as rapidly as possible.

SURGICAL TREATMENT FOR NASAL AND NASO-PHARYNGEAL REFLEXES.

This was the title of a paper read by Dr. Lewis C. Cline, of Indianapolis, Ind. He said the subject of naso-pharyngeal reflexes was not only of great importance to the specialist, but to the general practitioner, as it enabled him to account for, and intelligently treat, many distressing cases. To have a reflex phenomenon, we must have irritation produced in a sensitive nerve connected with a nerve centre or spinal cord, and this in turn must be connected with a motor fibre joined to a motor organ, which may be located in an entirely different organ or part from that in which the irritation is produced, as migraine from indigestion or uterine irritation, etc., which may result in a pathological lesion or a train of morbid symptoms. In no part of the body do we find the reflex tendency so great as in the naso-pharyngeal and respiratory regions, hence we should not be surprised to find the nose a frequent source of reflex phenomena. The first to call attention to nasal reflexes was Voltolin, who describes a case of spasmodic asthma due to nasal polypus, which was cured by the removal of the growth.

All writers on this subject recognized the importance of investigating the condition of the nasal membrane in these diseases. In 1886 Bosworth published a paper in which he argued that the prominent predisposing cause of nearly all cases of hay fever was due to obstructive lesions of the nose, in this way giving rise to vascular dilatation behind the point of obstruction, thus rendering the parts more susceptible to the action of irritating influences; and this in fact may, or does, account for many of the reflex phenomena that are met with; such as supra-orbital neuralgia, hay fever, asthma, some eye reflexes, chronic laryngitis, etc.

Sir Morell Mackenzie recognizes the fact that in a great majority, if not all cases of asthma, the mucous membrane of the nose presents evidence of disease.

To sum up, there were three essential conditions necessary for the production of an exacerbation of hay fever or asthma: 1. The presence of pollen or some irritating substance in the atmosphere; 2, a neurotic habit, and 3, a local morbid condition of the mucous membrane. These three conditions are present in all cases, and any individual is liable to an attack in whom one or more of these conditions are absent. Now, since a large per cent. of the cases have obstructive lesions, and all are exposed to the influences of dust and pollen at certain seasons of the year, we must look to the curing or bettering the conditions of the nose and naso-pharynx, such as deformed septums, spurs, tumors, hypertrophy of the turbinates, and adenoid tissue of the vault and tongue.

Dr. Cline reported several cases illustrative of the effects of surgical treatment.

In treating his cases, attention is not entirely directed to the local morbid conditions, but that due consideration is given to constitutional tendencies, such as malnutrition, scrofula, gout, and rheumatism.

Dr. P. Richard Taylor, of Louisville, thought that Dr. Cline's method of disposing of hypertrophied tissue, in the nose or any other portion of the body, with the galvano-cautery, was not the best; that the knife was far more preferable, inasmuch as it left no devitalized tissue in its track. It leaves a perfectly smooth and healthy surface, which becomes covered with epithelium. Scar tissue was the first tissue to break down where the galvano-cautery was used on an inflamed surface. In hypertrophied tissue of the turbinated bones, or tissue with increased vascularity, we cause shrinkage immediately around the point at which we burn; in other words, we make a cicatricial streak through the hypertrophy. He had noticed that patients were more liable to take cold when the galvano-cautery was applied to hypertrophied tissue. Wherever it is practicable to remove hypertrophied tissue, he thinks it is best to remove it with a clean cut instrument, one that leaves no devitalized tissue in its track. The surfaces will heal much quicker under the knife than with the galvano-cautery.

Dr. A. B. Richardson, of Cincinnati, said he was interested in the subject of reflexes from the standpoint of the neurologist, and thought that the position taken by the essayist was unquestionably correct, that many of the reflex neuroses were due to local irritations in the nose, pharynx, larynx, etc., and it is not necessary that these reflexes should exhibit themselves only in organs immediately connected with these, that they may present themselves by symptoms in various portions of the body where there does not seem to be any other connection than that they are in the same organization. There was no doubt but what many brilliant successes were reported from the correction of the various local irritations. There were cases of *noli me tangere*, that is, if the individual is touched or treated in any way, it results in an aggravation of the reflex. This was not an argument against the correction of the reflex, but it simply served as a warning to specialists as well as general practitioners, that they must not hope for success in every case

The probability of success depends upon the relation that the local irritation bears to the general neurotic tendency in the individual. If the neurosis is marked, if there is an extreme tendency toward irritation, if there is an extreme susceptibility to impressions upon the nervous system of the individual, we must expect frequently as the result of our attempts to correct the irritation, that we will aggravate the tendency, that we will increase the susceptibility, and that instead of finding our patients benefited as a result of local treatment, we will find them injured.

Then, we must take into consideration the psychic element in each case. The patient's attention should be concentrated upon the treatment. If we improve the local condition, we do much toward making the patient believe that we are removing the trouble. We know how much the psychic impression has to do with the ultimate result in these cases. By modifying the local symptoms, we do much to remove the reflex. On the other hand, if we have a very susceptible organization, with a tendency to the development of psychosis, the irritation results in decided injury. The tendency toward the development of psychosis is increased by local treatment, and the result is that the patient is not benefited, but made worse by treatment.

Dr. A. J. Banker, of Columbus, Ind., corroborated the theory advanced by the essayist. He recalls the case of a patient who had derangement of the digestive organs and impairment of the nerve centers. The patient became a confirmed invalid; he was unable to sleep, and could scarcely eat—in fact, the patient found comfort in nothing. He had been treated for catarrhal difficulty. On close insection he found two polypi, one hanging behind the soft palate nearly the size of a hickory nut; the other was in the posterior nares, which was seen by a reflected artificial light, and which was removed with great difficulty. The patient, after the removal of the first polypus, had a severe attack of inflammation of the structures about the nose. It brought about an attack similar to the one he experienced several years prior to that time. The nervous system had become in a tonic, clonic spasm, and he was confined to his bed for months. The same symptoms followed the removal of the second polypus, which he had labored under for some time. After the removal of the second one, there was no further difficulty. He has since remained comparatively well. In taking cold, the same train of symptoms returns.

Dr. Banker has used both the galvano-cautery and the knife, and so far as the effect is concerned, he could see no difference. He thinks, however, that where there is a neurotic condition emitted from the point of irritation, which has continued for a considerable length of time, we get a more decided effect on the nervous system by the galvano-cautery. He thinks there is an effect produced from the heat and galvanism upon the peripheral extremity of the nerve over and above that of any other source of application or treatment.

Dr. Lewis C. Cline, in closing the discussion, said that one of the objections to the use of the knife was hæmorrhage, which sometimes was difficult to control, and the operation had to be deferred in consequence of it. He, however, uses the knife in some cases, but he carefully selects those cases. When we come to treat hypertrophies in the nose, such as we find in the posterior end of the turbinates, it is difficult to see them without a palatal retractor. Dr. Cline finds that when he uses the cold snare and removes growths by degrees with a view of preventing hæmorrhage, it is much more satisfactory than with the knife. With the knife he gets an unusual amount of hæmorrhage, hence he is a little skeptical in regard to its use. Some people, he thought, were prejudiced against the cautery, but in his judgment no more harm resulted from its use than the knife.

Dr. Moses N. Elrod, of Hartsville, Indiana, read a paper entitled

THE CORRECT PRONUNCIATION OF MEDICAL TERMS,

in which he cited numerous examples of words that were daily mispronounced by physicians whom he thought knew better.

The paper was discussed by Drs. Elder, Richardson, Freeman, Burton, and Garrish.

Dr. C. A. L. Reed, of Cincinnati, followed with a paper on

HÆMORRHAGE AT OR NEAR THE MENOPAUSE.

Dr. William H. Wathen, of Louisville, Ky., regretted that he did not hear the whole of the paper. However, what he did hear of it was sufficient evidence of its practical character. The presentation of facts relating to cancer of the uterus ought to be studied carefully by every practitioner of medicine, just as much so as by the specialist, because the majority of cases are those that first consult the general practitioner, and are by him referred to the specialist for treatment. He could fully corroborate what Dr. Reed had said regarding the great difficulty the specialist had in seeing cases sufficiently early to enable him to do satisfactory work. There were women almost weekly consulting the specialist who could probably have been entirely relieved of their difficulty had they consulted him in the earlier stages of the disease. He had constantly been impressed in Society meetings in the vicinity in which he lived of the importance of making a physical examination in those cases where we have any symptom that would indicate malignant disease. Every woman who has a hæmorrhage at any stage of her existence from the uterus that is irregular, that does not conform to the general rule of her life, whether it is a young girl not over twenty, or in a woman of sixty, ought to be examined, and if the profession would adopt this rule, we would find that most of the cases of cancer would be diagnosticated sufficiently early to admit of treatment.

He thought the correct treatment in the early stages of the disease, before it had involved adjacent structures, is total extirpation after the fashion that the operator may adopt. While he was in Washington, attending the meeting of the American Gynecological Society, he was very much impressed by the remarks of Dr. Burn, of Brooklyn, concerning his (Burn's) experience in the treatment of cancer of the uterus by the use of the galvano-cautery. He (Burn) had operated upon five hundred cases with the heated knife, and had never had a death from any cause resulting from the operation. He never had sepsis following. He had to cut into the peritoneal cavity frequently, and had no concern about it. He had opened the rectum and bladder upon more than one occasion without serious results. The speaker felt perfectly sure that the results in the treatment of cancer of the uterus by the galvano-cautery in the practice of Dr. Burn were far more successful and less dangerous than in the practice of any man in this country from any other method. Now, then, the question might be asked why the speaker did not adopt it. Because he believes he could not get the successful results that Dr. Burn gets. He considers Dr. Burn a genius in this method of treatment. He understood it perfectly. It must be confined to very few men. Again, this treatment was far more applicable to cases where it is a question in the mind of the operator as to whether hysterectomy will give relief or not. In those cases that have gone a little too far, such as we usually get, unfortunately, the galvano-cautery comes in all right.

Dr. Wathen had, within the last two weeks, seen two cases in consultation, where he was entirely undecided as to whether hysterectomy should be done or not. He could promise these women but little benefit. Where the disease was extensive, even after an operation had been done, it

seemed to be universally the fact that the disease returned. He had seen a lady a day or two ago who had been operated upon by a prominent eastern specialist. The operation was well done, and every particle of diseased tissue was said to have been removed; but the woman had not long returned to her home before the disease recurred, and she rapidly went on to her grave. If the cases could be seen before the system is infected, before the involvement of any adnexa, before the disease has reached the vagina, or extended through the thickness of the uterine walls, or any of the cancer cells deposited outside, and operated upon, the disease might never return. Adenoma was in itself a malignant disease, but it might go on for several years with the woman having more or less trouble, and still there is no genuine cancer, so to speak, but when it does develop into cancer, the woman usually dies.

Dr. Geo. T. McCoy, of Columbus, said, as chairman of the Committee of Arrangements he had selected the subject under discussion for Dr. Reed, simply because, in his experience, there was nothing that gave the general practitioner so much trouble as hæmorrhage at or near the menopause. Another reason for asking Dr. Reed to read the paper was, that in a discussion before the Cincinnati Academy of Medicine, he (Reed) had read a paper upon the subject of fibroids, in which he made the observation that many women who were carrying fibroids of various sizes about without, apparently, any trouble, were rather a dangerous element in the community, for the reason that, while they themselves were suffering comparatively no inconvenience from these growths, many other persons were allowed to neglect operative or other means which might save their lives. He expected Dr. Reed to have dealt more with the subject of fibroids than he did in his paper. He hoped, however, in closing the discussion, he would touch briefly upon the diagnosis of hæmorrhage, and its causes at or near the menopause.

Dr. L. H. Dunning, of Indianapolis, Ind., said that one of the most perplexing class of cases with which the practitioner had to deal, were those women of 45 or 50 years of age who consulted him with reference to a severe hæmorrhage at the menopause—perplexing on account of difficulty of diagnosis, and perplexing on account of his inability to afford relief in a great many instances. We are unable to make a diagnosis to determine the cause of the hæmorrhage. Cases like this present themselves: A woman says she has profuse hæmorrhage, and that all remedies fail to give her relief. She is 45 years of age, and has never been irregular in menstruation, perhaps. How shall she obtain relief? In the absence of a fibroid tumor or cancer, he finds great satisfaction of late years in examining and treating these cases with the curette. Under such circumstances we found fungosities of the uterus. A case presented itself to him like this. About six months ago a woman came into his office, saying that she had menstruated continually for two years; that physicians had exhausted their resources and did not afford her any relief. No cancer; no fibroid. The cervix was dilated, and with a dull curette Dr. Dunning removed a large quantity of fungosities, which entirely relieved the patient. She has not menstruated since, and it is one year since the curettement was done. This one case might be taken as a type of many of the cases that present themselves to the practitioner.

Dr. Geo. W. Burton, of Mitchell, Ind., asked Dr. Reed how early, in cases of cancer of the uterus, could a correct diagnosis be made with the aid of the microscope; and if made early, would he advise total extirpation of the uterus?

Dr. Joseph Mathews, of Louisville, Ky., was very much entertained by Dr. Reed's paper. He would endeavor to answer the question of Dr. Burton as to whether it was possible to make an early diagnosis of cancer—he would not say of the uterus, rectum, breast, or anywhere else. Is it possible to do it? He might answer yes, sometimes. Upon three different occasions, happening within five months, patients had consulted him, giving plain evidence clinically of cancer of the rectum. Feeling that he did not know cancer when he saw it, he submitted specimens to the best microscopists in Kentucky. In each case the gentlemen returned him a note saying that the trouble was malignant. He then conveyed the sad intelligence to the nearest relative. Each one of the patients to-day was well.

While in New York a few weeks ago he picked up Harper's publication, and to his surprise, saw an article on cancer from Drs. William T. Bull and Curtiss. He was surprised because the article was written for that periodical, instead of for a medical journal. The next day he was invited by Dr. Wyeth to hear him read a paper before the New York State Medical Society. He went, and the gist of Dr. Wyeth's paper was that practitioners should write articles on cancer for these periodicals, the point being this, that if the female suffering from incipient cancer of the uterus could be forewarned at the time of the beginning of the tumor to consult her surgeon, the early removal of it would save her life. He believed this position was tenable. Do we ever see patients in this stage of the disease? He never had. He had been engaged in special surgery for fifteen years; he had excised cancers of the rectum, and had seen many of them, but had never yet seen a single case at the time when excision could possibly do any good. He had seen surgeons excise cancerous growths from the uterus, rectum, and other portions of the body, but the statistics, as far as recovery is concerned, were a little doubtful at least. The speaker did not hear that portion of the paper as to how many cancers Dr. Reed had removed, and how many got well; but he would ask him in the cases that he regards as recoveries, how long has it been since he did the operation? There was nothing that came before the surgeon to-day of such importance as the question of cancer. From time immemorial we had tried to find some specific for cancer, and that specific to-day is said to be the knife. Dr. Burton had hit the nail on the head when he said, "When can we make a correct diagnosis of cancer?" Ordinarily, in a general sweep, the surgeon would say all tumors should be removed, whether cancerous or not. This he believed to be good surgery, and in those cases with the symptoms that Dr. Reed had narrated, the speaker thought early excision would doubtless bring about a cure, but much depends upon where the cancer is located. When the surgeon excises a cancerous breast, how soon, if there be the least gland involvement, the disease reappears at the site of excision, or in other portions of the body.

Dr. Wathen had spoken of Dr. Burn's treatment by the thermo-cautery, and had given as fair statistics in the matter of recovery as any other surgeon who used the knife. Dr. Mathews believed this, because the surgeon, in his opinion, had done very little good with the knife, and he was satisfied that Dr. Burn with his thermo-cautery did little, if any, good. He could not be convinced that the application of the hot iron to a pathological structure could accomplish any good.

The speaker said Dr. Wathen had made a statement that should not go unanswered, which was, that all young girls up to 20 years of age, who suffered from irregular menstruation, should be examined, looking, he supposed Dr. Wathen meant, for cancer. He had been practicing medicine for twenty years, and had seen hundreds—yes, thousands of young girls with irregular menstruation. Perhaps a little attention to hygiene, to the bowels, a little exercise, getting up early in the morning, horseback riding, good food, re-

moval of mental depression, etc., would overcome the irregularity of the menstrual function. He could never submit to the idea of a distinguished gynecologist saying that young girls who suffered from irregular menstruation up to 20 years should be examined. He desired to go on record as putting his foot on such doctrine as that.

Dr. Mathews was anxious to know if the essayist could tell cancer when he saw it, and how he could tell it; and *when is*, and *when is not* an operation justifiable? And then his statistics as to cures by the removal of the cancerous growth, and especially the length of time that had elapsed since he did the operation.

A Member: I would like to ask Dr. Reed as to the probability of cancer in a woman of 30 or 35 with leucorrhœa and profuse hæmorrhage?

Dr. C. A. L. Reed, in closing the discussion, said he simply desired first to express his gratification at the unexpectedly interesting discussion to which his brief contribution had given rise. It was extremely gratifying that a paper written merely for its suggestiveness should succeed in eliciting from able gentlemen their mature views.

He would like to say something relative to the position assumed by Dr. Wathen, but as that gentlemen was not present, and being a little apprehensive that he may have misunderstood him, he preferred to pass his remarks with a few words. He felt sure from his knowledge of Dr. Wathen's skill, judgment, and inborn gentleness, that whatever he may have said, he did not intend to convey the impression that he would examine every girl afflicted with irregular menstruation. He believed his position was that cases of persistent hæmorrhage, even in young girls, should be subjected to an examination, and between persistent hæmorrhage and menstrual irregularities there was the widest possible difference. He believed that gynecologists who came daily in contact with disease involving the female generative apparatus, who had to contend with the inborn modesty and shrinking delicacy of womanhood and maidenhood, stood back till the last possible moment before enjoining submission to even a digital examination, particularly in young women. When he reflected upon his department (gynecology) of practice, he believed his *confrères* were actuated in this matter by that sense of delicacy which should control gentlemen; hence many a case which might have been remediable in the early stages became irremediable.

As stated in his paper, he had not time to discuss the relative merits of the different operations for the relief of cancer. There were several operations, dividing themselves into two classes, viz.: total extirpation, and partial extirpation of the womb. He had fortified himself upon a position which he had assumed with extreme satisfaction to himself for the purpose of giving his patients the benefit of an operation the dangers of which were less than those of the others. He advised total extirpation of the womb. In doing this operation he was enabled to go beyond the probability at least of the invaded area of tissue.

As to the probability of cancer in a woman about thirty with leucorrhœa and profuse hæmorrhage, upon these two symptoms alone he would be loth to give a diagnosis of cancerous disease. Cancer, however, occurred in all ages, but it occurred with more frequency near the menopause. A patient having persistent leucorrhœa and hæmorrhage needs careful investigation.

In regard to Dr. Mathews' question, the speaker thought he knew cancer when he saw it, sometimes. Cancer could not be absolutely diagnosticated at sight in the earlier stages, but it could be done with a reasonable degree of certainty that would enable the practitioner to give the patient the benefit of a doubt. Dr. Mathews' observation, that the successful treatment of cancer depends largely upon the location in which it is found, was a correct one. There was no place in which its treatment was so successful as in the uterus when seen sufficiently early and operated upon promptly and properly. The presence of a little nodule did not mean cancer, nor an erosion of the cervix. A patient applying to the gynecologist for some such trouble should be kept under constant observation, say every other day for at least six weeks, and the erosion, or whatever it may be, treated with the probability of its being benign in character. Then, if it does not subside, but becomes progressive, spongy or fungous in character, with a gradual metamorphosis of the normal structures, the practitioner should pick out a small piece and submit it to a microscopist. This would doubtless furnish presumptive evidence, and putting that with the aberrant epithelial deposit in the interstices of the areolar tissue, or with an erratic deposit of cells of the epithelial type, the practitioner would then have reasonable ground for suspicion that his patient had cancer. The speaker tells his patients that they have cancer, and says so with deep chest tones of conviction for them to take the alarm and act accordingly. It was time for action, and action should be inaugurated promptly. If it be not cancer, the operation would not be necessarily fatal. If it be cancer, procrastination on the part of the practitioner might prove fatal.

FIRST DAY—EVENING SESSION.

At this session an

ADDRESS OF WELCOME

was delivered by the Hon. Geo. W. Cooper (member of Congress) of Columbus, Ind., the response to which was made by the President, Dr. E. S. Elder.

Then followed the public address entitled MEDICAL HERESIES, by Dr. G. C. Smythe, of Greencastle, Ind.

At the close of the session there was a reception, followed by a banquet, tendered by the Bartholomew County Medical Society.

The social features of the meeting were excellent, largely due to the tireless efforts of Dr. Geo. T. McCoy and his associates.

SECOND DAY—MORNING SESSION.

Dr. H. M. Lash, of Indianapolis, read a paper on

POSTERIOR SPINAL SCLEROSIS.

He said posterior spinal sclerosis is a systematic disease of the cord, the posterior white columns—those of Gall and Burdach—being the affected parts. How is the sclerotic condition developed? Authorities are conceding that the condition is one primarily of hyper-nutrition. To comprehend fully the process, necessitates some knowledge of the arterial circulation of the cord. The pathological condition may be described as having three stages; 1. Hyper-nutrition, which multiplies the number of connective tissue cells, and forms new plastic elements; 2. atrophy of that new tissue; 3. destruction of the nerve fibres by compression.

The etiology is simply problematical. No definite cause or causes can be traced out. For a long time it was believed that it was due to syphilis, but that is being seriously questioned. There are two arguments against it; a. syphilis does not have a tendency to follow systematic portions; b. cures do not follow the most active anti-syphilitic treatment. The inherited tendency, without a doubt, plays an important part. But numerous exciting causes are named. It is a disease of the most active period of life, and occurs much more frequently among males than females. Occupations where there is much exposure to cold, dampness, fatigue, depressing emotions, surroundings incident to certain trades, where metals are used, seem to favor its development. The author's experience has been limited to three cases, all males in middle life, whose habits were active and exposed. One, a physician, who traveled nearly altogether

on horse-back over a large rural district, in all kinds of weather. Another, a railway mail-clerk, with a long, busy hard run. The third was a locomotive engineer. Syphilis was suspected in one. This one has reached a fatal termination. The others are following the usual progressive history.

The methods of treatment have been numerous and all attended by quite uniform results, viz., failure. But this should not deter us from further efforts. So far, it is put down among those diseases having a gloomy prognosis. For that reason, investigators in this field are digging deeper for causes and for pathological facts, with the hope of bringing it within reach of remedial and curative agents. The present status is certainly more hopeful. This statement is based on the belief that the theory of hyper-nutrition, as a cause, is correct. That being accepted as true, the procedure in the first or forming stage is plain. Unload the over-distended tissues and keep back the excessive flow of blood to the parts. This may be accomplished, provided the condition is sufficiently early recognized, by the combined use of such internal agents and local and general applications as tend to contract the arterioles and deplete the parts by carrying the over-accumulation of blood to other and, as much as possible, distant localities. Administer ergot in liberal doses. Its effect will be materially aided by giving with it one of the bromides. Locally, apply to the spine cold water, or, what is more positive in its effect, ice, a bag of it along the portion implicated. Ranney recommends the use of hot water as a beverage, a gobletful an hour and a half before each meal. His object is to increase peristalsis, stimulate urinal secretion, produce warmth of the skin, and encourage perspiration. His idea of revulsion is a commendable one. But may it not be carried further with added advantage? Invite the circulation actively to the extremities and to the entire cuticle. This might be accomplished by a wholesale application of counter-irritants and frequent hot foot baths. But if the proper appliances are attainable, it can be better done. Put the patient through such a course of general warm packing as will dilate the entire superficial capillary system, so arranged that it can be carried to any desired or required degree, and free perspiration produced. Maintain it for twenty to thirty minutes each day. Follow it by rest for several hours in a comfortably warm bed with massage.

During the entire procedure, however, keep the ice-bag constantly applied to the spine. This will meet the objection to, and failure of, the hot bath alone. The amount of blood sent to the affected part will be thus diminished while it is increased in the general circulation.

The dorsal position should not be encouraged. Such patients ought to lie mostly on the side.

The stage of established sclerosis or marked incoördination calls for a modification of the treatment. Bromides are no longer serviceable, and the same may be said of ergot. Iodide of potassium probably stands at the head of appropriate remedies, especially if syphilis is suspected. By its use the disease may be kept, at least, in abeyance for many years. All complications, such as the severe pains, incontinence of urine, constipation and the like must be treated in an enlightened manner as a means of relief to the suffering patient. Belladonna or its alkaloid best controls bladder difficulties.

Dr. A. B. Richardson, of Cincinnati, expressed his gratification at the able and satisfactory manner in which the subject had been presented by the essayist. It was by no means an unimportant subject, and very much depended upon its early recognition. It was quite surprising how long cases of posterior spinal sclerosis would continue under the observation of general practitioners before the true nature of the disease was determined. He had been surprised at the stage in which some of the cases had been referred to him.

The complications were sometimes so very unhappy that if we could by early treatment retard the progress of the disease, it would be an important consideration. Some of these complications had not been dwelt upon by the essayist. A very melancholy one was that of optic nerve atrophy. The speaker had two cases under his observation at present, and he thought there was nothing sadder than to see one of these cases with progressive loss of sight and great difficulty in locomotion. Another complication, of great interest pathologically as well as clinically, was paretic dementia. He had seen quite a number of cases of this character. They were interesting pathologically because of the relationship between the pathological changes in the brain and in the cord. Many practitioners assumed them to be the same. Sometimes the clinical history pointed to the cord lesion as commencing previously to that in the brain. Sometimes the brain symptoms developed first. He was quite sure, as a result of observation, that the pathological changes in these two regions were not precisely the same at least, whether they were similar or not. The pathological changes in paretic dementia were more inflammatory in character; they were more acute, and ran a much more rapid course, resulting in degeneration and destruction of tissue. There was more rapid atrophy, greater softening, more complete disintegration and disappearance of the normal nerve tissue of both the cells and fibres in the cortical substance than is found in the spinal cord in locomotor ataxia; so that the relationship between the two diseases was exceedingly interesting. Why it was that locomotor ataxia developed in so many of these cases without paretic dementia had not as yet been satisfactorily answered.

The speaker, from personal experience, was not led to take as gloomy a view of the prognosis in these cases as some practitioners.

In the treatment of the disease, iodide of potassium was frequently advised and the most extensively used. This brought up the question of the relationship of the disease to syphilis. There can be no doubt but what there is some relationship between the two diseases. Most neurological authorities state that 50 per cent. at least, if not more, of the cases have a syphilitic history. Gowers, he believed, states that probably 60 per cent. of the cases of posterior spinal sclerosis had a syphilitic history; yet it is conceded, at the same time, that syphilis does not stand in the relation of a direct cause.

Dr. A. B. Richardson, of Cincinnati, Ohio, read a paper entitled

THE PATHOLOGY OF NERVOUS EXHAUSTION.

In summarizing the element in the pathology of nervous exhaustion, he said that the state of well-being in the animal economy depends upon the proper balance in every tissue and every organ between the process of waste and repair. The stream of organic sensations going from each tissue and each organ to the sensorium is the physical basis for this sense of well-being. These are chiefly, in a state of health, sub-conscious, instinctive, and have expression only as habits of activity of the various tissues or organs. When from any cause this healthy balance between waste and repair is disturbed, whether it be by a diminution in the supply of nutrient material or excessive demands upon a particular part, or by the toxic influence of retained waste products, or of the poisons of microörganisms, or constitutional vice, this sense of well-being is disturbed or destroyed. The cells of the sensorium are made unduly susceptible, and the stream of organic sensations from the various tissues and organs rise into consciousness, the results being subjective disquietude, unrest, mental depression, functional exhaustion, im-

paired assimilative capacity, a sense of conscious effort where none should be required, and a constant consciousness of a loss of energizing capacity. In the various forms there may be a cortical hyperæmia, or anæmia, or a simple blood dyscrasia. The result in each case is the same, the rejection of the supply of proper nutritive material to the cortical cells below the point which enables them to meet successfully the demands made upon them.

The cell changes in this stage of the disorder are molecular. By proper treatment they are removable. If allowed to continue, they result in cell degeneration and permanent deterioration or proliferation of cell function.

There is a strong tendency toward recuperation in the cortical cells, however, and they will often withstand prolonged abuses before they begin to show evidences of degenerative changes. The disorder is so gradual in its inception, as a rule, that it usually can be corrected before these changes appear, and there is not therefore much danger, with proper treatment, that serious or permanent mental derangement will follow. Exhaustion in the various subsidiary systems contribute to the exhaustion of the cortical cells in the degree to which they contribute nutritive perversion. Of all the cases contributive to this state those which act directly upon the cortical cells in the way of overstrain, either by worry, or over mental exertion, are the most injurious. Underlying the whole system of causation and determining the influence of its various elements as the influence of the type of cortical cells. The susceptibility, inhibitory controlling power and recuperative power of the particular type determines the degree of vulnerability. Some types were essentially unstable and have slight power of resistance. Others have great susceptibility, but strong resistive powers, giving them capacity and strength; while still others with strong resistive capacity have but a limited susceptibility, giving safety but limited capacity for work.

Discussed by Drs. Lash, Reed, and discussion closed by the essayist.

Dr. L. H. Dunning, of Indianapolis, Ind., read a paper on

RECURRENT PELVIC INFLAMMATION,

in which he summarized as follows:

1. Recurrent pelvic inflammation is a mixed disease involving organs and tissues of widely different histological structure.

2. It usually begins in an endometritis, but in the end the Fallopian tubes, ovaries, pelvic peritoneum, and sometimes the pelvic cellular tissue are all more or less affected by the morbid process.

3. An uncured acute inflammation of any one of the organs or structures named above predisposes the patient upon the operation of an exciting cause to a recurrent acute attack. Each acute attack still more predisposes to subsequent recurrencies.

4. Suppuration in any of the structures involved may occur. It most frequently occurs in the Fallopian tubes.

5. Prophylactic treatment is the rational one.

6. Pregnancy and delivery are fraught with danger in patients who have recurrent pelvic inflammation.

7. Electricity aids in the promotion of the absorption of the exuded lymph before it becomes thoroughly organized into tissue.

8. When suppuration occurs operative procedures are indicated. The method of evacuating the pus or removing the pus cavity must be determined upon investigating each individual case.

Discussed by Drs. Reed and Dunning.

SECOND DAY—AFTERNOON SESSION.

Dr Joseph M. Mathews, of Louisville, Ky., read a paper entitled

ANTISEPTICS IN RECTAL SURGERY.

He said at one time he seriously doubted if the antiseptic treatment would obtain in rectal surgery as in other operations. Since he had fully tried the precautions and rules in this department of surgery, he was persuaded that, with care and attention to details, the same advantages could be obtained. Not only do we get quicker and better results by their use, but we also prevent septic infection, which sometimes forms wounds around the rectum. When we remember that it is not the size of the wound which controls the amount of sepsis, but the exposure to the cause, we can understand that the operation on a simple pile, whether by ligature, clamp, cautery, injection or otherwise, may result in septicæmia, tetanus, etc. When we remember, too, the large amount of blood that goes to the rectum, and the close continuity of the glandular system, it is no wonder that a septic infection can and does take place from wounds inflicted in this locality. It is a fact worthy of note that persons suffering from a malignant affection of the rectum, die often of rapid sepsis.

In the operating room Dr. Mathews uses the following articles:

Two earthen bowls, 2 earthen dishes, 1 irrigator, 1 bottle of Johnson & Johnson's bichloride of mercury tablets, 1 bottle carbolic acid, 1 package absorbent cotton, 1 rubber sheet, 1 bottle ligatures (silk), 1 bottle prepared cotton and gauze sponges, 1 small bottle iodoform, drainage tubes, 1 razor, 1 nail brush, bandages, bichloride gauze, iodoform gauze, 1 jug boiling distilled water, 1 waste water bucket, 12 sublimated towels, 1 dozen safety pins, 1 teaspoon, 1 chloroform, or ether, cone, 1 can vaseline, 1 hypodermic syringe, 1 bottle chloroform (Squibbs), 1 can ether, sulph. morphia tablets, brandy, nitrite amyl.

It may seem to some that this is a long list, and should there be those who would question the necessity of some of these articles, to such an one he would say, that if any one article in the list is left out, the day might come to the doubting surgeon, when he would wish that it or they had been included. When he looked back over his past surgical work, and remembered the death of a patient from tetanus resulting from the ligature of internal hæmorrhoids, he wonders, if he had remembered to have taken his little tablet of mercury, if the patient would have been living to-day.

Discussed by Drs. Reed, Dunning, Cook and Mathews.

Dr. Geo. J. Cook, of Indianapolis, read a paper on

REFLEX DISTURBANCES FROM RECTAL DISEASE.

He said three factors were essential for a reflex act, an afferent nerve fibre, a transferring center, and efferent nerve fibre forming a reflex arc. A very common reflex from rectal disease is pain over the posterior surface of the sacrum and coccyx. When this reflex exists, if the disease is limited to the lower part of the rectum, the patient will complain of pain at the end of the coccyx; if the disease is in the central part of the rectum, the pain will be in the center or lower part of the sacrum, and when the disease is in the upper part of the rectum the reflex will be in the upper part of the sacrum between the innominate arch. The location of the reflex will indicate the part of the rectum involved, demonstrating that the nerves to any part of the rectum and to the posterior surface of the vertebral column opposite these, are given off from the same point in the spinal cord, bearing the same relation as the nerves to a muscle and skin over it. The chief nerve supply is to the lower part of the rectum. The middle and upper parts possess comparatively little sensibility, yet in diseased condi-

tions of them we see very severe and troublesome reflexes, causing the patient much more pain than the primary lesion. Disturbed heart action is a reflex which we see in connection with disease of the rectum, and especially with disease of the upper part. Irritation of the rectum will inhibit the action of the heart. This is demonstrated under anæsthesia. When the patient is thoroughly under the influence of the anæsthetic, and the sphincter muscles are stretched, it is not uncommon for the pulse to become quite weak for a time. It is surprising sometimes to see what extensive reflex disturbances will result from a comparatively slight primary lesion in the rectum, and again what extensive disease can exist, especially in the middle and upper parts of the rectum, without any manifestions reflex in character.

PALLIATIVE AND OPERATIVE TREATMENT OF ENLARGED PROSTATE.

Dr. William N. Wishard, of Indianapolis, Ind., read a paper on this subject, in which he said it is now well recognized that enlargement of the prostate produces appreciable symptoms only in a minority of cases. Also that while the majority of patients who have prostatic enlargement are men well advanced in years, yet it is not necessarily a senile disease.

The radical treatment of enlarged prostate contemplates the removal of obstructing growths. The cases reported by the author illustrated some of the forms of prostatic enlargement. They were reported with the belief that bladder surgery, particularly in the past few years, establishes the following principles:

1. That a large per cent. of cases of prostatic cystitis which are not susceptible of relief by the well known methods of palliative treatment, can be more or less permanently relieved by surgical interference.

2. That perineal and supra-pubic incision are the two methods best calculated to accomplish the results sought.

3. That neither one of these operations is suitable to all cases, and that both may sometimes be required.

4. That the object of a radical operation should be the removal of the mechanical obstruction to urination, and drainage and rest of the bladder.

Statistics thus far show that restoration of bladder function has followed in over two-thirds of the reported cases of removal of mechanical obstructions caused by prostatic growths and furnish occasion for careful study of all cases of prostatic enlargement, accompanied by the usual symptoms with a view to determining what cases are amenable to surgical relief, and what are the best means of solving the mechanical problems involved.

So far as the writer is aware, no effort has as yet been made to enucleate a lateral lobe through a median perineal incision. The perineal opening has been utilized chiefly for the division of prostatic bars and collars, and the removal of pedunculated middle lobes and nodular hypertrophies about the vesicle orifice. In one of his cases (No. 13) the writer was able, by dividing the mucous membrane covering the enlarged right lobe and dissecting it off with the finger, to remove the gland by piecemeal through a median perineal opening. The index finger of the right hand was the only instrument used after the opening was made. Counter-pressure was made with the first two fingers of the left hand, passed up the rectum, and pressed upon the upper end of the enlargement.

The specimen was presented.

If it be possible to determine before hand which operation — perineal or supra-pubic — will afford an opportunity to examine the inside of the bladder, we have gone far toward securing the data necessary to the selection of the form of operation best suited to individual cases. In determining beforehand, we have no means of securing positive evidence, but there is already accumulated sufficient experience to afford valuable indications in the selection of the operation probably best suited to the individual cases.

(*a*) It appears in the very valuable collection of 133 cases by Belfield of operations upon the enlarged prostate, that the perineal operation is somewhat safer than the supra-pubic.

(*b*). Inability to reach and explore the bladder by a perineal opening is said to exist in about thirty per cent. of all cases.

(*c*). Where it is possible to reach and explore the bladder by perineal incision, it is not generally possible to do so with the same thoroughness as by a supra-pubic incision.

(*d*). Where there is an elongated prostatic urethra, it is generally associated with a rectal tumor of large size, and the increased length of the prostatic urethra and the consequent increased perineal distance, is approximately indicated by this fact and by measuring the distance with a catheter from the meatus to the point where urine is obtained. A large rectal tumor was accompanied by an elongated prostatic urethra in all of the author's cases.

On motion the Society adjourned to meet July 2 and 3, 1892; place of meeting to be decided by the officers.

NECROLOGY.

Dr. Gideon S. Palmer, M.D.

Dr. Gideon S. Palmer died at his home, 1113 Massachusetts avenue, Washington, D. C., Dec. 8, in his sixty-ninth year. Dr. Palmer's illness was of protracted duration, and his death was not unexpected.

Dr. Palmer was born in Gardiner, Me., June 14, 1813. When a young man he taught the Lyceum at Gardiner, and fitted himself for college. He graduated from Bowdoin College, Maine, in the class of 1838, and afterward studied medicine in Philadelphia. He served his native city as councilman, alderman, representative in the State legislature, where he was associated with Secretary Blaine. At the beginning of the late war he enlisted as a volunteer surgeon, serving as brigade surgeon on Gen. O. O. Howard's staff in the Army of the Potomac. He was in charge of Lincoln Hospital, of a hospital at Annapolis, and retired with the rank of brevet lieutenant colonel.

In 1869, at the request of General Howard, Dr. Palmer took the chair of physiology and hygiene in the medical department of Howard University. He was for many years dean of the university faculty and surgeon in charge of the Freedman's Hospital. He leaves a widow and son, who were with him at the time of his death.

Dr. Robert Alexander Kinlock, of Charleston, S. C., died December 23, in his sixty-sixth year. He was the professor of surgery as well as dean of faculty, in the Medical College, ex-president of the Medical Society of South Carolina, formerly vice-president of the American Medical Association and first surgeon to the Roper Hospital on Queen street. He was at one time editor of the *Charleston Medical Journal*. During the war he served the Confederate forces as medical examiner, inspector of hospitals, and medical director of the southeastern department. He was a contributor to the local periodicals and to the *American Journal of Medical Sciences*, chiefly on surgical and epidemiological subjects. He was an associate member of the Philadelphia College of Physicians.

By birth, Dr. Kinlock inherited both Scottish and Welsh

traits; by education he was cosmopolitan, having besides his training at home and at the University of Pennsylvania, a considerable term of study in the hospitals of London, Edinburgh and Paris; by his personal character and the fine temper of his intellect he was worthy to be filed in the Brahmin class, as it has been outlined by Dr. Holmes. His place will not readily be filled.

DR. LEVI OLMSTEAD WIGGINS.—The death of Dr. Levi Olmstead Wiggins, of Newburg, December 27, in his twenty-sixth year, removed a promising junior member of the profession. He was a Yale valedictorian and Larned prizeman in 1885. He took the Harsen prize at the college of Physicians and Surgeons in 1888. He was a year at Roosevelt Hospital, and had spent a year in Europe at the cliniques of London, Dublin, Berlin and Vienna. He returned home last spring with impaired health, from pulmonary disease, and was unable to rally therefrom.

THE *Lancet* (London) says that without the foundation of a good, sound general education, a medical man will be at a disadvantage permanently throughout life. He may do well, but he will never do his best; and to no one will the disadvantage be more painful than to himself. This is the chief disadvantage now of our profession. The study of medicine is a commanding study, and those who prosecute it should have the highest influence in the community. If they have not, it is largely due to defects in general culture which hinder the full use of their professional advantages and the best expression of their professional knowledge.—*Amer. Lancet.*

MISCELLANY.

Ohio Legislative Committee.

COLUMBUS, O., DECEMBER 3, 1891.

Pursuant to call issued by the Cincinnati College of Medicine and Surgery for a delegated convention of the medical colleges of the State of Ohio, to be held at Columbus, on the date above mentioned, representatives of the following faculties were present, viz.: Starling Medical College, Toledo Medical College, Pulte Medical College, Columbus Medical College, Medical Department of the National Normal University, College of Physicians and Surgeons of Columbus, Women's Medical College of Cincinnati and the Cincinnati College of Medicine and Surgery.

On motion, Dr. Starling Loving was elected Chairman and Dr. Charles A. L. Reed, Secretary.

On motion of Dr. C. E. Walton, representatives of the Physio-Medical Society, of Ohio, were admitted to a vote in the convention.

Dr. Charles A. L. Reed presented the following:

Resolved, By the Medical Colleges of Ohio in Convention assembled, that the Legislature be and is hereby requested to enact a law which shall embody the following features, viz.:

1. The creation of a board or boards of medical examiners in the composition of which equitable and just representation shall be accorded to the various recognized denominations of medical practice.

2. The examination of all candidates for the practice of medicine holding diplomas hereafter issued by medical colleges which shall be deemed in good standing by the board.

3. Exemptions from examination to extend only to those who, at the time of the enactment of this law shall be recognized as legal practitioners within the meaning of existing statutes; but all legal practitioners shall be required to register.

4. A penal clause which shall secure the enforcement of the foregoing provisions.

Dr. C. E. Walton, on behalf of the Legislative Committee of Cincinnati, presented the registration law approved and promulgated by that committee.

On motion by Dr. Shockey, the resolutions presented by Dr. Reed were approved.

On motion by Dr. Kinsman, the secretary was directed to forward transcripts of these proceedings to each local medical society in Ohio, and to the medical press.

On motion by Dr. Scoville, a committee was appointed to confer with the Legislative Committee of Cincinnati for the purpose of securing such changes in the bill proposed by that committee as to make it conform to the resolutions adopted by this convention.

The chair appointed as such committee,

Drs. S. S. Scoville, T. C. Hoover, G. W. Mayhugh and Chas. A. L. Reed.

Adjourned.

CHARLES A. L. REED, Secretary.
STARLING LOVING, Chairman.

GOLDEN BELT MEDICAL SOCIETY.—The winter meeting of the Golden Belt Medical Society, will be held at Salina, Kas., Thursday, January 7th, 1892.

Programme, afternoon session, 3 o'clock.

1. General Order of Business.
2. Paper by T. B. Ross, M.D., Abilene.
3. "Report of an Interesting Surgical Case," J. W. Crowley, M.D., Salina.
4. "Report of Cases in Practice," H. V. Boyce M.D., Bennington.

Evening Session, 8 o'clock.

1. "Etiology and Treatment of Scarlet Fever," T. N. Gunn, M.D., Chapman.
2. Paper or Report of Cases, M. B. Ward, M. D., Topeka.
3. "Shall We Operate in Damaged Tissues," P. Daugherty, M.D., Junction City.
4. Subject for General Discussion: "Epidemic Influenza."

ERRATA.—In our last issue it was our pleasure to publish the list of members of The Association and subscribers for THE JOURNAL. In some instances we were not able to fill out the date of membership, and in some cases the dates given we believe to be wrong, although they were printed according to the list found in the office. We hope the members will let us know of such errors in order that future lists may be made as perfect as possible.

THE *Times and Register* will continue to be published in Philadelphia.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 19, 1891, to December 25, 1891.

Capt. Edwin F. Gardner, Asst. Surgeon, is relieved from further duty at Ft. Porter, N. Y., and also from temporary duty at Ft. Columbus, N. Y., to take effect upon the arrival at that post of Capt. Walter W. R. Fisher, Asst. Surgeon, and will then proceed to Ft. Mackinac, Mich., for duty. By direction of the Acting Secretary of War.

OFFICIAL LIST OF CHANGES of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending December 19, 1891.

Surgeon P. H. Bailhache, detailed as chairman of board for physical examination officer, Revenue Marine Service. December 17, 1891.

Surgeon G. W. Stoner, granted leave of absence for twenty-two days. December 16, 1891.

P. A. Surgeon H. R. Carter, to proceed to South Atlantic Quarantine for temporary duty. December 10, 1891.

P. A. Surgeon C. E. Banks, to inspect unserviceable property at Marine-Hospital, Baltimore, Md. December 10, 1891.

P. A. Surgeon S. C. Devan, to proceed to Montreal, Canada, on special duty. November 30, 1891.

P. A. Surgeon W. J. Pettus, to report in person to the Supervising Surgeon-General. December 3, 1891. To proceed to Newbern, N. C., on special duty. December 12, 1891.

P. A Surgeon H. T. Goodwin, granted leave of absence for ten days. December 2, 1891.

Asst. Surgeon J. B. Stoner, granted leave of absence for seven days. December 18, 1891.

Asst. Surgeon A. W. Condict, granted leave of absence for seventeen days. November 30 and December 15, 1891.

Asst. Surgeon G. W. Guiteras, granted leave of absence for ten days. December 15, 1891.

Asst. Surgeon W. G. Stimpson, granted leave of absence for ten days. December 2, 1891.

Asst. Surgeon B. W. Brown, detailed as recorder of board for physical examination officer, Revenue Marine Service. December 17, 1891.

Asst. Surgeon L. E. Cofer, granted leave of absence for fifteen days. December 15, 1891.